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Systematized

ANATOMY,

OR

HUMAN

ORGANOGRAPHY,

IN SYNOPTICAL TABLES, WITH NUMEROUS PLATES.

FOR THE USE OF UNIVERSITIES,

Faculties and Schools of Medicine and Surgery, Academies of Painting, Sculpture,
and the Royal Colleges.

BY

THE CHEVR. J. SARLANDIÈRE, M. D.

MEMBER OF THE ROYAL ACADEMY OF MADRID AND OF THE MEDICAL SOCIETY OF EMULATION AT PARIS; CORRESPONDENT TO THE MEDICAL SOCIETY OF LOUVAIN, BRESLAW, &c.; EX-SURGEON OF THE FRENCH ARMY AND OF THE MILITARY HOSPITAL OF PARIS.

TRANSLATED FROM THE FRENCH BY

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SECOND EDITION, IMPROVED AND CORRECTED.

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TO

SAMUEL JACKSON, M. D.,

ADJUNCT PROFESSOR OF THE INSTITUTES AND PRACTICE OF MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA,

ONE OF THE PHYSICIANS TO THE PHILADELPHIA ALMS HOUSE INFIRMARY, &c., &c.

SIR,

I have ventured to inscribe this work with your name, because I feel well assured that no undertaking which is calculated to promote the cause of medical improvement, will be viewed with indifference by so ardent a votary as yourself.

I therefore respectfully dedicate these pages to you, as a testimony of the high estimation in which I regard your talents and acquirements, and of my sense of your valuable labors in the advancement of Anatomical, Physiological, and Pathological knowledge, effected not less by the eloquence of your public lectures, to which I have listened with pleasure, than by the power of your pen.

Long may you continue to pursue the career of professional usefulness in which you have already attained to such conspicuous eminence; and to enrich the literature of our science with the results of your ample experience, and the suggestions of your enlightened understanding.

I am, Sir,

With great respect,

Your obedient servant,

WILLIAM C. ROBERTS.

PRELIMINARY OBSERVATIONS.

I HAVE perfectly satisfied myself that a knowledge of the Science of Anatomy, in all its parts, and even in its details, may be acquired in fifteen lessons. If such a conviction were to be received as a recommendation of the method by which I have endeavored to attain that end, and which is contained in a certain number of tables, I could entertain no doubt as to the success of my labors; but to have taught quickly, is not alone sufficient: the merit is to have taught well, and upon that point it does not become me to express an opinion. I am limited to an exposition of the means of which I have availed myself to attain my object, which is to render the study of that science much easier than it has hitherto been. Men of deserved celebrity have encouraged me with their approbation, and have emboldened me to prosecute an undertaking, of the difficulty of which, they who are content with mere superficial examination, or who glance only at the inconsiderable number of engravings by which the whole science of Anatomy, or human Organography, is herein represented, can form no idea. But it will be appreciated by those who are lovers of clearness and precision, and who are desirous of seeing much matter comprised in few words. In the composition of the tables, as I now offer them, I have been led into numerous anatomical investigations, have long and deeply meditated, and have, moreover, spent two years of assiduous labor in the correction and perfection of my work. Each organ therein represented has been drawn from nature, after its more ordinary configuration had been established, and the accuracy of anatomists, ancient or modern, tested and verified. On entering upon a task of such importance, I naturally look back to the condition in which, previous to our own times, Anatomy had been placed; and I examined the impediments by which the study of man's organization was prevented from becoming an essential part of his education; and what, therefore, could be the obstacles which induced him to neglect the acquisition of a knowledge of Physiology, the science of the vital functions, and without which, man, alike in his political institutions, and in his precepts of morals and philosophy, will continually be led astray. Whoever, indeed, engages in the consideration of subjects which relate to the wants or the happiness of man, should be familiar with his organization; this is the chief requisite, and it is owing to their ignorance of this branch of knowledge, that Rosseau, Locke, Plato, Helvetius, and Condillac himself, committed such serious errors. I have convinced myself that these obstacles consist principally in the length of time which is needed to understand the details of the science, and the difficulty of retaining and classifying in the memory, the numerous objects it includes. It is the general opinion, that in acquiring a thorough knowledge of Anatomy, two years of assiduity must be spent. Who, then, unless he devotes himself to the profession of medicine, can employ so considerable a portion of the period of time allotted to his education, in the study of this particular branch? and who, on the other hand, would refuse to become acquainted with a science so useful as that of his own organization, if he require for that purpose, fifteen sessions only, each of two hours duration? Upon this subject I shall now enter into some further details.

The greatest difficulty in the study of Anatomy lies, not in the inspection of objects, but in the number of names, or words by which they are represented; in the faulty classification of those words, in their singularity and often in correct signification, and lastly, in a want of graphic method. The nomenclature of the muscles, ligaments, glands, vessels, nerves, and of the organs of sense, is liable to similar objections; of these numerous organs, some bear the names of the functions they perform: others receive their appellations from their shapes, situation, or direction, while a third class are called after the authors by whom they have been either discovered or described. From all this arises a labyrinth of words not to be recollected by the most retentive memory, unless after long and fatiguing study. This incongruity and looseness arrested the attention of Chaussier, who first attempted to systematize anatomical nomenclature. This reform he chiefly effected in that of the muscles, and thence derived much of the celebrity which he has acquired. Struck with the effect upon the imagination which he observed was produced by those names that had been bestowed by his predecessors upon certain muscles, which represented at the same time their extent and places of insertion, such as *sterno-cleido-mastoid*, *occipito-frontal*, and the names of attachment given to the muscles of the *tongue* and *hyoidean* regions, he conceived the happy thought of applying a name derived from its places of attachment to each muscle of the body, and thus invented a uniform system of appellation for the whole muscular apparatus. Some of the nerves and blood-vessels also received from him more correct denominations; but, while we admit the merit of this celebrated man, whose judicious mind was able thus to shake off the trammels of ancient *routine*, and to establish names much more proper for representing the things for which they were intended, we are obliged to confess that he left unremedied the chief difficulty, that which consists in the classification of such a vast number of words in the memory. By some he is said even to have increased the evil, by introducing into the science as many new words as there had before existed old ones, in so much as it became necessary to acquire the new names to form an idea of their meaning, whilst the remembrance of the former was essential for comprehending anatomical writers. Yet, as it was impracticable to establish a new nomenclature, without at the same time affixing a different name to each organ, there existed an urgent need for some method by which these words might be rendered easy of remembrance. While I regret that Chaussier should have made so important an omission, and waiving all consideration of the risk attendant on making a similar essay after him, I have ventured on the attempt, but without aspiring to attain the merit of that rigid and correct preceptor. Like him, I have allowed the names of the bones and their peculiarities to stand as they were adopted by the ancients, and the moderns of our civilized times, because they are the fundamental basis of our whole organization, which they serve to support. The names which had already been affixed to the viscera as the foundation of the internal organs, I have also preserved, because these viscera constitute the parts most essential to existence; and, to all other organs, be they what they may, I have given names derived from these two fundamental bases, so that it is in fact only necessary to engrave upon the memory the names of the bones and of the viscera, whence those of every other organ are to be derived. Further, I have arranged each of the new names beneath collective denominations drawn from the regions of the body, and thus it is, as an examination of the tables will show, that I have simplified the operations of the memory. The plan upon which I have proceeded to render my method the most simple and the easiest possible, is the following: I have first, by way of introduction, made an exposition of the organism, in which I have introduced an analysis of each tissue, that the pupil might the better understand my tables, and that I might be saved from the necessity of overloading them with any lengthened disquisition. Then comes *Organography*, which is divided into eight parts: 1st, *Osteography*, or a description of the bones; 2d, *Arthrography*, or a description of the joints, or articulations; 3d, *Myography*, or a description of the muscles; 4th, *Aesthesiography*, or a description of the organs of sense; 5th, *Splanchnography*, or a description of the viscera; 6th, *Diacrisiography*, or a description of the apparatuses of secretion; 7th, *Angeiography*, or a description of the blood-vessels; 8th, *Neurography*, or a description of the nerves.

OSTEOGRAPHY is represented by synoptical tables, arranged in three columns, the first of which contains the fundamental names of the bones and their situations; the second, the particular office of each bone; the third, the peculiarities which may be observable in them, such as places for the attachment of muscles, cavities and processes, the foramina which allow of the passage of the arteries and nerves, and the articulating surfaces. All other peculiarities which are useless, or which do not come under one or other of these four heads, I have passed over in silence, with a view of not overloading the memory.

ARTHROGRAPHY is arranged beneath two columns only, the one for the name of the joints, the other for that of the parts of which they are composed, either ligaments, membranes, or fibro-cartilages; these parts I have named after the ends of the bones which they connect together, and have assigned to them, as an uniform termination, the generic terminal name of the articulation. The former name is also preserved and follows in a parenthesis. The MYOGRAPHICAL table consists of four sections, the first of which contains the names of the regions in which the muscles are situated; the second the names given to each muscle according to its attachments or places of insertion; the termination of each of these words expressing the generic appellation of the region in which the muscle is, and, as far as is possible, indicating the part which it is intended to set in motion. Thus, those muscles which are situated in the epicranio-frontal region, and whose office is to cause motion of the forehead, all end in the word *frontal;* those in the auricular region, and whose use is to move the auricula, or external ear, end in the word *auricular;* those in the palpebral region, the motors of the eyelids, terminate by the word *palpebral*, and those of the ocular region, by the word *ocular*, and so on.

The first glance tells us how methodical such an arrangement is, and how, by it, things are signified in a very few words; for example, the term *occipito-cutanei-frontal*, suggests the idea of the extent of a muscle which goes from the occiput to the forehead; set forth its places of insertion, by the one end into the occipital bone, and by the other into the integuments which lie over the frontal bone; the terminal word showing that it lies chiefly in the region of the forehead, and also that its use is to move the skin of that part. How many circumstances are thus indicated by a single denomination! In the third section of the table, is contained the name given to each muscle according to its form, or situation; and the fourth, lastly, contains the name which it obtains in reference to its uses, or its functions.

I have so contrived it, that in order to understand anatomical authors, the old name has been retained in one or other of these three sections. From the preceding remarks it will appear, that three denominations are sufficient to form a complete history of each muscle, and to furnish an accurate idea of every thing about it which it is of importance to notice: whilst, in works upon the science, a whole page is often filled with the description of a single muscle; hence, by my method, there is effected both a saving of time, and of the labor of comprehension. What then alone is wanting to fix the remembrance of that muscle indelibly on the memory? ocular inspection! To supply this want, in the absence of human bodies, or of casts or models in pasteboard, wax, or plaster, I have conjoined engravings to my tables, with numbers upon the one which refer to the other; and where natural or artificial objects, intended to promote the study of anatomy, are arranged beneath the eye of either the pupil or the practitioner, these engravings may serve him as guides, and materially facilitate his researches. All the figures of which the plates consist, have been drawn with perfect fidelity from nature; the muscles are arranged in regions, and ultimately are all collected in representations of the complete human frame. The AESTHESIOGRAPHY is exhibited in a single table, without regular sectional divisions, but consisting of links that connect all the parts which have a mutual dependence on each other. In it are detailed, with all possible precision, all the organs which compose the apparatuses of the five senses, as well as the functions they are intended to perform. SPLANCHNOGRAPHY, and DIACRISIOGRAPHY, which is in a measure an appendix to it, are represented in two tables. In the first, are delineated the viscera contained in the cranio-vertebral cavity, viz. the brain and the spinal marrow; those which are enclosed within the thorax, viz. the vocal and respiratory organs, and the central organ of the circulation; those, lastly, which are enclosed within the abdomen, the digestive, urinary and genital organs of either sex. DIACRISIOGRAPHY, which is naturally related to the viscera, because the secretory apparatuses of which it treats include the particular organs of nutrition, forms, with splanchnography, a complete detail of the circumscribed organs, or those which are disposed in sets or apparatuses. We next arrive at the organic systems, consisting of the canals which ramify all over the body, in which circulate the nutritive juices, and of others which contain the conducting material of sensibility and motion; these systems constitute ANGEIOGRAPHY and NEUROGRAPHY. The first is represented in three tables, one of which exhibits the entire arterial system of the body, both supra and infra-diaphragmatic, in methodical order, so that every trunk, branch, or twig, receives a compound name, derived from the place whence it proceeded, and from that to which it goes. For example; the first branch of the aortic trunk carries the blood into the substance of the heart, and is consequently denominated *aorto-cardiac;* this branch divides into two smaller branches, which are the anterior *cardiac* and the posterior *cardiac*. The anterior gives off three twigs, which are the right *cardiaco-auricular*, the right *cardiaco-ventricular*, and the anterior and posterior *inter-cardiac* arteries. From the posterior go off the left anterior *cardiaco-ventricular*, and the left posterior *cardiaco-ventricular* arteries. The aorta next gives off the brachio-cephalic trunk, which in my tables is with greater precision termed the *aorto-post-clavi-trachelian* artery, whence proceed branches, which, when as high up as the clavicle, all begin by the word *sub-clavi*, and end in the name of the part to which they pass. When they have reached the heighth of the cervical vertebræ, these branches begin to assume the appellation *trachelo*, and so on; being thus, by their names, always linked with one another, and also with the places at which they terminate, and from whence they set out. By this methodical arrangement, the origin, course, and situation of the arteries is always kept in view; all those which are of any importance whatever, have received an appellation, whilst the former name of each vessel which possessed one, is retained as a memento, and follows the systematic one in a parenthesis. The second table traces out the supra and infra-diaphragmatic venous system: and here a different order from that of the arteries was to be pursued. As the venus ramusculi originate in the tissues, and unite for the formation of twigs, and subsequently of branches, converging towards the centre of circulation, I have first enumerated the veins of the hands and feet, naming all from the places of their origin and destination; and have placed in an appendix, the central thoracic (pulmonary) venous apparatus, and the central abdominal venous apparatus, viz. the vena portæ. In the third table is exhibited the system of lymphatic vessels, which, like the veins, begin by the twigs most distant from the trunks in which they merge. The division of NEUROGRAPHY concludes the work, and offers a detail of those systems which convey sensibility into every other part of the body. It contains three tables, of which the first comprehends the nerves which issue from the cavity of the cranium, and to which I have affixed the root *cerebro*, to distinguish them from the spinal, although the first pair is a cerebral prolongation, and all the rest an emanation from the medulla oblongata (bulbe rachidien, Chaussier.) The second table comprises all the nerves which go off from the spinal column, and have as a root the generic word *spino*. The third table embraces the ganglionic system of nerves, with all the plexuses which emanate from it. All the nerves which pass off from the ganglia, have as a root the word *gangli*, and those which issue from the plexuses, the word *plexi*. These tables of the different nervous systems, are traced with the most scrupulous accuracy, and with all the minuteness to which the use of the microscope, and the most delicate dissections have enabled me to attain. I have bestowed the most pains upon this portion of my labors, as it is the most important and difficult; no where have I met with a satisfactory anatomical account of the nerves, nor do I think that there is any other than the present work, in which, at a single glance, is exhibited the entire assemblage of the conducting organs of sensibility and of animal or organic motion. (Bichat.)

I have now concluded all that I had to offer in explanation of my tables. To Doct. Leboyer, who with consummate ability presided over the greater part of the dissections; to M. Courtin, whose faithful pencil has with truth and talent portrayed the parts and preparations under their most favorable aspect, and to Dr. Pinchonnière, for that part of my work which relates to the nervous system, I offer the well deserved tribute of my gratitude.

It remains for me to point out in what manner, by means of the tables, I have been enabled in fifteen lessons, to communicate a knowledge of anatomy, not only to students of medicine, but to painters, sculptors, dramatic artists and lawyers. For those who are desirous of pursuing a similar study, I employ preparations for demonstration, that there may be no dissecting or delay whatever during the lessons. The first session I dedicate to an outline of the organism, a demonstration of the composition of the tissues, to naming the bones and pointing them out upon the skeleton. The second lesson is occupied in describing the bones of the head and face; the third in a description of those of the trunk and limbs, after a recapitulation of those of the face and cranium. I allow an interval of one day between every lesson, in order that the pupil may have time to re-enumerate and classify thoroughly in his memory, the objects which were demonstrated to him on the preceding day. At the commencement of the three subsequent lessons, I again recapitulate the names of all the bones, that they may not be forgotten. The fourth lesson is spent in a demonstration of the muscles of the head and neck; the fifth, in that of the muscles of the thorax and upper extremities; the sixth in that of those of the abdomen and pelvic members; the seventh, in a general recapitulation of all the muscles; the eighth, in a description of the external senses; the ninth and tenth, in a demonstration of the viscera and organs of secretion; the eleventh, in that of the topography of the arteries; the twelfth, in that of the lymphatic vessels; the thirteenth, in an account of the distribution of the cerebral nerves; the fourteenth, in that of the spinal nerves, and in a description of the ganglionic systems; and the fifteenth, lastly, in a general recapitulation of all the apparatuses and organic systems. Two courses of public lectures, which I have delivered in the amphitheatre of the Faculty of Medicine at Paris, and a third in M. Dupont's cabinets of anatomical preparations in wax-work are sufficient evidences of the efficiency of my system. The artificial preparations, invented by M. Auzoux, are also very well calculated for a demonstration of the muscles, and the beautiful specimens of wax-work, made by M. Talrich, may be employed in the study of the nervous systems and of the organs of the senses with advantage.

For acquiring in a very short time all the peculiarities of Anatomical Science, as taught by Dr. SARLANDIÈRE.

The difficulties which, until the present period, have beset the study of the Science of Anatomy, and have demanded from the pupil a period of at least two years for its comprehension, consist chiefly in the vast number of immethodical names which are bestowed upon organs, as well as in the prolixity of description, and the most unnecessary repetition. Systematized Anatomy has overcome these impediments, by a simplification of the nomenclature, by a rejection of all useless appellations, by attaching a meaning to all which have been retained, and by connecting with them the names either of regions, or of their respective organic centres: all which is set forth in synoptical tables, by which, at a glance, all the apparatuses or systems are exhibited, and the relative dependance of organs upon each other understood. Fifteen tables, preceded by some preliminary remarks, comprise the whole study of the science. The nomenclature presented in this work is not a mere collection of terms newly invented, for the purpose of assigning a more rational *name* to each organ, but it is a descriptive system of denominations, by which the objects are indicated in their situation, tracks, limits and relations.

The basis of nomenclature is in ever instance derived from the bony scaffolding and from the viscera, which are, as it were, the arena upon which all the accessory parts assemble: the joints, the muscles, the secretory and excretory tubes, the arteries, veins and nerves, all receive their appellations from these two bases, by which means, a few words, adopted in every language and known from the very creation of the science are perpetually reappearing, are easily recollected, soon render the mind familiar with the regions, and introduce into the study of Anatomy a lucidness and spirit of order, which wonderfully quicken the progress of the student in learning, and of the practitioner in remembering all the peculiarities of a science, the approaches to which have hitherto been so wearisome and laborious.

THE CONTENTS OF EACH TABLE, AND THE MANNER IN WHICH THEY ARE TO BE STUDIED.

The *first table* contains the *exposition of the organism*, that is to say, a general anatomy which describes the composition of the tissue, the form of the organs, the nature of the functions, differences of organization, and all general remarks upon composition and offices, which, if they were to be comprised in the graphic portion of the work, would be liable to perpetual reiteration, and give rise to embarrassment.

The ensuing tables offer us *Osteography*, or the basis of the nomenclature of the *outer* man. The first points out the bones of the head, in number 20. A plate is attached to it; the capital letters refer to the entire bone; they are followed by the fundamental name which it is necessary to keep in mind, which is the same in all the languages used by civilized nations, and is incessantly reproduced in the description of accessory organic parts, which are invariably comprised in the region occupied by each bone. The small letters point out portions, or divisions of the bone, and the numeral figures its peculiarities, embracing the processes, cavities, places of the attachment of muscles, holes or furrows which allow of the passage of the arteries, veins, or nerves. The second table contains the bones of the trunk and limbs, which are 177 in number, the references to which, as to lettering and numeration, are similar to those of the first. A plate also accompanies the table, containing the individual bones, with the addition of their conjunction in the form of a skeleton.

The 4th table relates to *Arthrography*, or a description of the articulations. Here commences the method of which the bones serve as the basis; all the ligaments, cartilages, and fibro-cartilages of the skeleton, in number 146, are classified in this table which consists of two columns; the first, indicates the joints to which the parts composing them, and the number of ligaments, are attached; the second, contains the descriptive names of each component part; every name being formed from the bone which gives attachment to these ligaments, and ending in the terminal indication of the articulation itself. *Thus:* the ligaments, or cartilages, which compose the temporo-maxillary articulation, all terminate by the word maxillary: those which form the tarsal articulations, end in the word tarsal, so as to indicate, without any effort of the memory, the articular region in which they are placed. By this means, the termination alone is sufficient to declare the region, but the entire description is derived from the entire descriptive name; thus, the ligament called the calcanei-scaphoido-infra-tarsal, shows by its terminating word thnt it belongs to the tarsal region; the last word but one, that it is plantar, and the first two that it stretches from the bone of the calx to the scaphoid bone; the numerals 118, which go before, refer to the plate which accompanies the table, and point out its form and situation; the words *post, inter, supra, intus, extus,* which precede a final word, indicate its situation relatively to the skeleton placed vertically, the old names being preserved in a parenthesis.

The 5th and 6th tables, headed *Myography*, contain a description of the supra-diaphragmatic muscles of the skeleton, which amount to147, and are accompanied by two plates. The tables are divided into four columns: the first, indicating the regions and the number of the muscles therein contained; the second, their names according to their attachments; each denomination compelling the memory to a four fold operation by showing in the final word the region in which the muscle lies, and by the name in full, the part which it chiefly moves, its extent and its insertions. *For instance:* the word *occipito-cutanei-frontal*, the name of the first muscle, shows by the final word, (frontal) that its particular location is the region of the forehead, in like manner with the other frontal muscles; the termination also shows that it is to move the forehead, in the same way as the muscles of the auricular, palpebral, ocular, nasal, and labial regions, set in motion the auricle, the eyelids, the balls of the eyes, the nose, and the lips. The word *occipito*, on the one hand, shows that the muscle is attached to the occipital bone, and the words *cutanei-frontal*, on the other, that it has also an attachment to the integuments of the forehead. The same method governs every other muscle; (when they are attached to the frontal integuments to wrinkle it, they contain the word *cutanei;* if not, they always take the names of the bones into which they are inserted;) whilst, finally, the attention, when directed simultaneously to the root and to the termination of the word, discloses the extent of the muscle, which proceeds from the occiput to the forehead. The third column presents us with the names according to shape or situation; the fourth suggests the uses or functions of each muscle. Among these three varieties of denomination, is always to be found the old and most generally adopted appellation, videlicet: in the column of attachments, when the old name properly belongs to it, as does that of occipito-frontal, stylo-glossal, sterno-hyoid, &c.: in the third column, when the name of the muscle has been derived from some peculiarity in its shape or situation, as supra-ciliary, pyramidal, orbicular, rectus superior and inferior of the eye, myrtiform, great and lesser oblique, triangular, or quadrate muscle of the chin, trapezoid, deltoid, and the like: in the fourth column, when the name is drawn from the function of the muscle, such as levator of the upper lip, adductor, abductor, flexor, extensor, pronator, or supinator.(1)

The 7th table, likewise headed *Myography*, and accompanied by two plates, embraces in it all the infra-diaphragmatic muscles, which are 73 in number. It is arranged similarly to the two preceding tables, and will require to be studied in a similar way.

The 8th table presents us with *Aesthesiography*, that is to say, the composition of the sensorial apparatuses, viz. the visual, the auditory, the olfactory, the gustatory, and the tactile, together with a plate divided into five compartments, in which are figured all the peculiarities which appertain to each of these apparatuses. The capital letters in this table designate the parts which are the chief instruments of sensation, and the small letters, or the figures, indicate the parts that are secondarily constituent, such as the horny, or membranous tissues, the humors, ducts, muscles, ossicles, cartilages, sinuses, laminæ, layers, and all other accessory bodies. Not only do these tables contain an anatomical exposition of the above named apparatuses, but the functional uses are also detailed in them, in order that an accurate list may be afforded of the graphic and physiological disposition of the senses.

The 9th table contains *Splanchnography*, or a description of the viscera, the basis of the nomenclature of the *inner* man, which comprises the human vocal, respiratory, central circulatory, digestive and genital apparatuses; and here again the capital letters designate the viscera, which furnish their names to the vessels, nerves, or other organic parts that are connected with them: the small letters indicate the principal parts of each viscus, and the figures, the parts of which they are composed. When these parts themselves act as rallying points for other organic parts, the name is printed in small capitals, whilst secondary parts are designated, according to their importance, by the usual type, or by italics. All constituent parts are associated to the principal organs by brackets, which serve to make a better divisional mark, and, after the last bracket is placed a designation of the uses or functions of each organ, or of its subdivisions. Opposite to the table is a plate containing a delineation of all the parts named in it, with letters and figures of reference.

The 10th table is an exposition of *Diacrisiography*, or of all the excretory and secretory apparatuses combined in a single system. (This is a proceeding which has never been attempted by any anatomist until now, and is so much the more natural that as it comprises all the glands and their appendages, a single system of nerves, the ganglionic is concerned in their vitality. This division is a branch of splanchnography. The table is in three divisions: one contains those organs whose excretory ducts open upon the mucous membranes; the next, those whose exhalant orifices are in the serous membranes, and the third, those whose ducts terminate in the skin. Each of these divisions is subdivided into cavities, crypts or follicles, into which the canals of the glands open, or into organic apparatuses which embrace parts destined for very important functions; capitals point out the glands, membranes and organs of higher importance; the smaller letters are appropriated to the follicles and crypts, and numerals to the excretory ducts, Greek letters being used to indicate parenchymata whose uses are as yet unknown. The particular apparatuses are designated in a marginal column; brackets connect constituent parts one with another, and the last bracket is followed by a statement of the uses and functions of each apparatus. A plate, illustrative of its figure, will be found opposite the table.

The 11th table, headed *Angeiography*, details the whole arterial vascular system, so that capitals, followed by smaller capitals, indicate arterial trunks and their larger divisions; small letters, with titles in small capitals, the principal branches; when they are followed merely by letters of the ordinary type, they point out the small branches; figures designate twigs and ramusculi; all these trunks, branches, and twigs are respectively united by brackets, so that the relations of a single trunk to its final ramifications, may be seen at a glance: an arrangement peculiarly advantageous for study, or for mental reference in case of incision, or the operation of ligature, and by which, moreover, each name designates an artery, and brings to mind at once its situation, course, place of departure and of destination. *For instance:* the first artery which leaves the trunk called the aorta after its issue from the heart, proceeds towards the anterior part of that organ, upon which it ramifies; it ought therefore, of course, to receive the name of the anterior aorta-cardiac: the twigs which it distributes, supply the right auricle and ventricle, and communicate between the two ventricles, and they, therefore, deserve the appellations of right cardiaco-auricular, right cardiaco-ventricular, and of cardiaco-inter-ventricular arteries. Such of the arteries as had already been designated by previous writers will be seen to have their ancient names following their descriptive one in a parenthesis. The immense utility of this synoptical table, is observable at a glance. Towards its conclusion is an exposition of the system of vessels which are exterior to the greater circulation, and belong to the central-thoracic, or pulmonary circulatory apparatus, and to the central abdominal circulatory apparatus, or system of the vena portæ. A plate, which contains a representation of all the principal arteries and arteriolæ of the human body, is attached to the table.

The 12th table is a continuation of *Angeiography*, and represents the venous and lymphatic vascular systems, which differ from the system of arteries materially, notwithstanding that all authors have been satisfied with advising the veins to be studied according to the course of the arteries. On the present occasion an inverse proceeding becomes necessary, and the author has so acted in the arrangement of his table. He has commenced with the venous twigs designated by numerals, which are associated by the termination with the branch into which they empty, and which comprises them all within a bracket. The branches designated by small letters, empty into the branches whose names are preceded by small capitals, to which latter they are in a similar manner attached by an uniform termination and a bracket; finally, the latter are coupled with the venous trunks in the same way, and these trunks indicated by capitals followed by smaller capitals. Following the venous system, and in the form of an appendix, we are presented with the system of the lymphatic vessels, which, as it is less important than those of the veins and arteries, is not detailed with equal precision, but in which every thing of importance will be found, and a plate of either system faces the table.

The 13th table, with the title of *Neurography*, comprises a description of the brain, with a notice (according to all modern physiological experimenters) of the functions of each constituent part. (It was found exceedingly difficult to connect all these parts with one another, but the author, by the assistance of the progressive development and the generatory production of fibres described by MM. Gall and Tiedemann, has succeeded in solving the problem.) This table is highly valuable in its anatomical and physiological relations; the spinal apparatus is described both anatomically and functionally. But that part of his undertaking which cost the author the most labor, and has been attended with the most brilliant success, is the detail in the same table of the apparatus of the ganglionic system of nerves, and which was never yet so described by any anatomist as to be well understood. The author himself understood it not until the completion of his table, and it may be unhesitatingly asserted, that in this work alone is there to be found a lucid description of this important system of nerves. All the ganglia of the head required to be linked with their common centre, the great superior cervical ganglion; the ganglionic nerves of the neck and upper part of the thorax, with their plexuses, naturally were connected with the middle and lower cervical ganglia; the lower thoracic nerves, and a portion of the infra-diaphragmatic were linked with the thoracic ganglia; the upper intra-abdominal nerves, with the great plexiform ganglion, (the *semilunar*); the lower with the abdominal; the upper pelvic with the lumbar, the lower with the sacral; all the nervous filaments discoverable by dissection, have, in this table, received a descriptive systematic name, which points out, like that of the vessels, their situation, track, place of departure, and of destination; each filament emanating from a ganglion, takes for its root the generic word *gangli*, and as a finale, the name of the part to which it is sent; and that which issues from a plexus, begins by the word *plexo*, or *plexi*. The ganglia are indicated by capital letters; the plexuses by small letters, and the nervous filaments by numerals. The plate which faces the table contains *five* figures of the brain; the *first* shows the production of the generatory fibres, and the direction in which they radiate; the *second* is a section of the cerebrum and cerebellum, showing the white and gray substances, the cerebellal ramifications, (*arbor vitæ,*) the 3rd and 4th ventricles, the bulgings called the optic thalami, and those called corpora striata, the tubercula quadrigemina, and the appendix called the pineal gland; the *third* is a vertical section, showing the inter-ventricular septum and a vertical portion of the third ventricle; the communicating canal, (aqueduct of Sylvius) leading to the 4th ventricle, of which a vertical section is also given; the tubercula quadrigemina which are above this canal, the great interlobary commissure, (corpus callosum,) a vertical section of the cerebellum, the interlobary circumvolutions, and lastly, the primary origin of the cerebral nerves in the white substance; the *fourth* shows the 5th ventricle and the lateral ventricles, the trigone cerebral, (or vault,) and its dependencies, a portion of the optic thalami and corpora striata; and the *fifth* represents the base of the brain, the bulb, the protuberance, and place of departure of each of the cerebral nerves. Two figures represent the spinal marrow; one shows it entire, placed upon a base-formed by the dura-mater, being a section which exhibits the fourth ventricle, the intra-medullary canal, and the exit of the spinal nerves; the other is a segment, representing the originating fasciculi of the spinal nerves, the lower origin of the 12th cerebral pair, the origin of the diaphragmatic, and the beginning of the trachelo-humeral-plexus. Two other figures show in detail the whole ganglionic nervous system, and a smaller supplementary one represents the 1st, 2d, 3d, 4th, and 6th pairs of cerebral nerves, and belongs to the table which follows.

The 14th table is a continuation of the *Neurography*, and represents the system of the cerebral nerves, (the 12 pair of nerves which pass out of the cranium, being classed in it according to the order of their exit;) they take as a root the word *cerebro*, to mark their origin; the 12th pair takes as a root the word *spino-cerebro* which indicates its double origin, and the word which follows points out the course and situation of the nerve as far as its termination as a trunk, or its subdivision into branches, or secondary rami. The latter are designated by capitals, or small letters, according to their importance, and the ramusculi which pass off from the secondary divisions of the nerves are indicated by figures, and a root which connects them in the same bracket to the rami or branches whence they spring, the final word showing, as in the table of the arteries, the organic parts to which they are distributed. When they form plexuses, the ramusculi which go out from these plexuses take the word *plexi* or *plexo* for a root, and an explanation of the function of each nerve follows its denomination. Each branch, secondary ramus, and ramusculus is connected by means of brackets to the nervous trunk upon which it is dependant, and thus at a glance is comprehended the whole system of sensation and motion, of which it is the soul. A plate is attached to this table, and contains also some references to the table which follows it; the cerebral pairs are pointed out by Roman numerals, followed by a *P* and a *C*, (paires cerebrales, Fr.;) the figures which refer to the spinal pairs are followed by the letters S. P. The origin of these spinal and cerebral pairs, is likewise represented in the preceding engraving.

The 15th table, also a continuation of the *Neurography* represents *the system of spinal nerves* classified according to the order of their going off, from above downwards, which are referred to by Roman numerals; the small numerals indicate the branches, and capitals designate the plexuses; Grecian letters show the fasciculi, or divisions of branches, which are either distributed to the same part, or pass in the same direction. The root of these nerves is the word *spino*, to distinguish them from the cerebral and ganglionic nerves, which for a root take the word cerebro or gangli; when plexuses have been formed, those which pass out from them take the word *plexo* for a root, and the final word indicates always the place to which they are destined, so that in the same manner precisely as for the other nerves and for the blood-vessels, the name always exhibits the course, situation, place of departure and arrival; all the nervous filaments which have no names in books, here take their descriptive appellation, and thus it is, by a very simple method, that their study is facilitated. Lastly, the last plate is a recapitulation or revision of the parts which constitute the muscular, nervous and vascular systems or apparatuses, with figures referring to each of these sections, that the parts of the organism may be comprehended as a whole. By these means is a method completed, which by its simplicity and conciseness, rapidly enables the student to acquire such an amount of anatomical knowledge as hitherto he was able, only with toil and difficulty, to attain.

(1) It may be well to observe, that in the natural position of the skeleton, the palms of the hands looking backward, that part of the forearm which was considered as outwardly by the ancients, becomes internal, and *vice versa*, which occasions a transposition of the names as they relate to situation; but a little attention will prevent the commission of error.

AN EXPOSITION OF THE ORGANISM.

THE organic tissues of the animal body are soluble, by ultimate analyses, into *Gelatine, Albumen* and *Fibrin;* and they also contain some phosphate of lime, iron, various salts, alkalies, &c., diversely combined.

All *constituted organic parts* are naturally divisible into *hard parts*, which serve as a support to the whole organism, viz. the bones and cartilages: into *solid soft parts*, which comprise the agents of motion, sensation, and nutrition: and into *fluids*, viz. the blood, lymph, and all the secreted fluids, which are the agents of depuration and assimilation.

The parts of the body, when considered more particularly, and classified according to their physical and chemical composition, may be divided into a certain number of homogeneous *tissues*, and are severally called the osseous, cartilaginous, fibro-tendinous, muscular, cellular, dermatoid, epidermoid or horny, erectile, glandular, serous, mucous, vascular, and nervous tissues. Assuming different forms, these tissues compose limited portions of the organism, to which the name of *organs* has been given. The organs of the human body are the instruments of life: by them it is that the *functions* are performed.

The organic functions are divided into the partial and the general. The partial are those which are performed by a particular group of continuous, or contiguous organs, and constitute only a more or less limited portion of the organism. To such groups of organs, I have applied the term *apparatus;* thus, the assemblage of the bones forms the apparatus of sustenance, or support; the muscles, that of locomotion: besides which we have the external and internal sensitive apparatuses, the central sensorial, the vocal, respiratory, central circulatory, digestive, genital and secretory apparatuses. The general functions are accomplished by means of organs, which being susceptible of ramification, penetrate into all the others, and pass from a central starting point into all parts of the organism. These functions are excitability, the motory power and nutrition; the assemblage of organs by which each of these general functions is accomplished, has received the name of *system*, and therefore I call the whole of the nerves of the body, *nervous system*,—all the arteries, *arterial system*,—*venous system*, the assemblage of veins,—*lymphatic system*, that of the vessels of that name.

The distinction then between systems and apparatuses is this, that the latter are only limited portions of the organism, whilst systems are the entire organism considered in a particular point of view.

THE TISSUES WHICH COMPOSE THE SYSTEMS AND APPARATUSES OF THE ORGANISM.

I. THE TISSUE OF THE BONES is compact and very hard; properly speaking, it is merely a gelatinous parenchyma in which phosphate of lime has been deposited; the central thickness of the long bones consists of very compact tissue; the ends of these bones, the interior of the short bones, and that of the flat bones, at the adult age, are formed of a spongy looking tissue; the large bones of the limbs, having in their centre a medullary canal, are towards that cavity, composed of reticular tissue, and contain the marrow. The assemblage of the bones of the human frame by means of cartilages and ligaments, constitutes the skeleton, which is a scaffolding and support to all the soft parts, assigns limits to the body, and becomes the axis of its general form. The bones of the trunk and head are curved to form the walls of the splanchnic cavities: they support and protect the viscera; the bones of the limbs are levers, moved in an admirable manner by the muscles, and are of use in transporting the entire body from one place to another; they effect prehension and resistance, and serve for the general performance of all the actions necessary for the wants or preservation of the individual.

II. THE CARTILAGINOUS TISSUE is of solid consistence, and holds a middle place between the fibrous tissue and the bones; its aspect is pearly, it is elastic, and consists of albumen and a small portion of calcareous phosphate. Cartilages are met with at the moveable articulations of the bones, in order to prevent the friction of articulating surfaces; they also exist between the sternum and the ribs, and in the larynx, and by means of their elasticity serve to restore the parts to which they are attached to their natural position, after they have been distended by the muscular efforts. The *fibro-cartilaginous tissue* is only a modification of cartilage; its consistence is less dense, its elasticity is greater, and its uses are the same; fibro-cartilages are found between the bodies of the vertebræ, where they serve to restore the spinal column to its wonted perpendicularity, after it has been curved in the motions of the trunk. The outer ear is also formed of a fibro-cartilage, in like manner with the upper eyelid, the rings of the trachea and the alæ of the nose; their office is to keep those parts open, or to give insertion to muscles; they are met with of a target-like or annular shape between articulating surfaces, when they serve as cushions for lessening the severity of shocks inflicted by the limbs or levers upon the joints, or where they line the edge of a cavity, as at the ilio-femoral articulation, to allow of a greater extent of motion.

III. THE FIBROUS TISSUE, is still less dense than the fibro-cartilaginous, and more flexible; like it, it consists of gelatine and a portion of the phosphate of lime; it is made up of very distinct shining fibres, of a dull white or silver gray color; these fibres possess great power of resistance, are not contractile, are very difficult to rupture, and arranged very closely together; sometimes they are in bundles, sometimes exist as membranes, and either lie parallel, or intersect each other.

FASCICULAR FIBROUS TISSUE (IN BUNDLES.)

- a *Tendinous* T. (Tendons are fibrous cords by which the muscles are terminated towards the lever, or moveable part, and are attached to the bones by a firm union with the periosteum. At their opposite extremity is inserted the muscular fibre.)
- b *Ligamentous* T. (Fibrous fasciculi of greater or less width, which connect the bones, and resist the power of muscles when exerted upon the contiguity of the bones.)

MEMBRANOUS FIBROUS TISSUE (IN LAYERS).

- c *inter osseous and obturatory T.*
- d *capsular T. of the joints.*
- e *capsular T. of the tendons* (sheaths).
- f *supra-osseous and intra-osseous T.* or periosteum.
- g *aponeurotic T.* or supra-muscular.
- h *intra-cranio-vertebral T.* (duramater).
- i *sclerotic T.* or circa-ocular.
- k *Pericardium*, or circa-cardiac *T.*
- l *Albuginea*, or circa-testicular *T.*

IV. The TISSUE OF THE MUSCLES is composed of fibrin, arranged in the form of filaments, or of fibres in juxta position, of a red color, more or less deep according to the state of nutrition, of soft texture, and slight resistance in comparison with tendinous fibre; they are of uniform size, and possess the faculty of shortening themselves. These fibres are arranged in bundles planted upon tendons, aponeuroses, or bones, and sometimes also upon the skin. Generally they are straight, except in the sphincter muscles, in which they are orbicular, and by their contractions they effect motions, or myotility. Motions of much extent and of but little energy, are performed by the fasciculi which consist of long fibres: those of short fibres, but which are multiplied in the direction of their length, are much more active, but have a much less extent of motion; the latter are the fleshy bundles which form distinct masses called *muscles*. These organs are fusiform, wide or flattened, of different sizes, but for the most part long in the limbs, broad on the trunk and head, and short upon the face, the hands and the feet. The muscles are enclosed in aponeuroses, and surrounded by cellular tissue; those of relative life execute the sudden movements, whilst those of nutritive life, (with the exception of the heart) generally contract in a slow and vermicular manner; the latter are met with in a state of membrane.

V. The CELLULAR TISSUE, which is very abundant in the economy, clothes all the organs of the body, and penetrates into the texture of the greater part. It is an assemblage of whitish, elastic, extensible filaments, which intersect each other in the form of laminæ; it is intended to envelope the organs, and maintain them in their relative positions; to serve them as a support, and to facilitate the slipping of those which move; and of it, likewise, consist the cells in which the fat is deposited upon those parts of the body which possess the greatest rotundity of form.

VI. The DERMIC (or dermatoid) TISSUE is composed of several layers. (Vide Æsthesiography, the cutaneous apparatus.) Of these the thickest is a whitish, hairy, fibro-cellular, dense and compact body, covered with a papillary vasculo-nervous, and by a mucous layer, which encloses the coloring principle of the skin.

VII. The HORNY TISSUE (corneous) offers several varieties; the *epidermis* is a thin semi-transparent, insensible membrane, of horny appearance; the *nails* are of similar nature, but more thick and hard; the transparent *cornea* of the globe of the eye belongs also to the corneous tissue, but is highly diaphanous, and the *crystalline* lens is of the same structure.

VIII. The ERECTILE TISSUE is of a nervoso-vascular nature, very irritable, and admits of the permeation of a sudden rush of blood through its innumerable capillary vessels; at the moment of this turgescence, and consentaneously with its nervous irritability, the tissue swells, expands, hardens and grows red. The corpora cavernosa penis and clitoridis, the glans, spongy portion of the urethra, the nipple, the papillæ of the tongue, and intestinal villosities, are of this character.

IX. The GLANDULAR TISSUE is of a varied character; but generally consists of small, rounded, smooth granules, grouped together, connected by cellular filaments, and arranged in lobules, or in an even parenchyma in which the arteriolæ that are distributed to the glands terminate, and from which the orifice of the proper excretory duct of each gland takes its origin.

In the salivary, lachrymal and pancreatic glands, the glandular tissue is arranged, by means of cellular tissue, in isolated lobes; in the liver and kidnies, it is smooth and firm; the tonsils, the prostate, and all the mucous follicles offer a soft and pulpy tissue, not lobulated and but slightly granulated, and the testicles offer a mass of vessels convoluted upon themselves. The combination and description of all the glandular apparatuses constitutes Diacrisiography.

X. The SEROUS TISSUE is shining and smooth, lax, extensible, whitish, semitransparent, and arranged in membranes which line the splanchnic cavities, the viscera, and the extremities of the bones, at which they form shutsacs: from their surface a fluid called serous is exhaled, which lubricates them, and facilitates their sliding on the moving of the organs which they clothe. The serous membrane which invests the brain, has been called the *arachnoid*, that which lines the lungs and parietes of the chest, the *pleura:* that in which the heart is enclosed, the *pericardium*, and that which invests the digestive, urinary and genital viscera in the abdomen, takes the names of *mesentery, peritoneum* or *epiploon*. Those serous tissues lastly, which are met with in the capsules of the joints, are called *synovial membranes*.

XI. The TISSUE OF THE MUCOUS MEMBRANES is soft and spongy consisting of follicles or crypts connected by cellular tissue, forming a kind of glandular chorion-surmounted with nervoso-vascular papillæ, and covered by a very delicate epidermis. All internal parts which are destined to be brought into contact with external agents, are clothed with this tissue; it lines the larynx, the cavities of the face, and the air passages, in which during the processes of respiration, audition and locution it is every where in contact with the atmospheric air; it covers the whole interior of the digestive tube, in which it moulds itself upon the alimentary substances it contains; and in the bladder and canals of the genital apparatuses, it is in contact with the urinary and seminal fluids, or with the exterior bodies which are capable of introduction into those passages. At the orifices which open upon the skin, it is dense, compact and highly sensitive: but in the splanchnic cavities it loses its tactile sensibility, and becomes the seat of sensations, or the internal senses, such as the necessity for respiration, that for food (or hunger), for drinks (or thirst), the feeling of satiety, of a need of the natural exonerations, of sexual intercourse, &c. This tissue varies in its color and thickness in different parts; in the external meatus of the ear and sinuses of the face it is very thin and pale; on the palate and lips it is thick and very florid; in the vagina, stomach and small intestines, it holds a middle course between these two extremes; and lastly, the surface of the mucous membrane in its whole extent is moistened with a fluid in greater or less abundance, and more or less thick, destined to shield it from the action of foreign bodies, and to favor its gliding motion.

XII. The VASCULAR SYSTEM is arranged in cylindrical canals which traverse all the other tissues, not excepting the bones; the walls of the arteries and veins are thick in the large trunks, and decrease in thickness with their caliber. The vascular tissue is divided into the *arterial*, the *venous*, and the *lymphatic*, each of which systems are divided into branches and twigs; they rally at a central point of circulation.—1st, the *arterial* tissue is of fibrous consistence, is firm, elastic, contractile, and of a yellowish white color, slightly dilatable, and consists of three membranes, or coats; the inner one thin and reddish; the middle one composed of circular muscular fibres, of great fragility: the outer one laminar, dense, compact and unyielding.—2d. The tissue of the *veins* is neither so thick, nor so unyielding as that of the arteries; it is of a grayish-white, and consists of three membranes: the inner one is red, smooth, and polished, like that of an artery, and forms numerous folds called valves; the middle coat is very thin, lax, and extensible, and composed of longitudinal parallel fibres; the outer tunic is merely a layer of cellular tissue. The tissue of the *lymphatic vessels* consists of two membranes; the inner one thin, transparent and very fragile, which forms valvular folds; the external one dense, cellular and contractile. Glandiform ganglia are placed at intervals along the course of the lymphatic vessels, which consist of a reddish areolar tissue, filled with a whitish juice (the lymph).

XIII. The NERVOUS TISSUE is evidently composed of two portions, the medullary substance within, and the neurilemma without; the latter is a canaliculated membrane, firm, transparent and unyielding, which forms the parietes of the nerves, or the contiguous cords which compose them, and which exist in greater or less number, according to the nature or size of the nerve. The medullary substance is soft, white, stagnant, and of the consistence of bouillie (boiled meat); it fills the interior of the neurilemmatic canals; veins and twigs of arteries penetrate into the cellular tissue which separates the small neurilemmatic canals of each nerve, and contribute to their nutrition. Like that of the vessels, the system of nerves consists of trunks, branches and twigs, and rallies at a cental point of innervation.

OSTEOGRAPHY.

The total number of bones which compose the apparatus of support, (the skeleton,) is 197, not including the three intra-nasal bones, described with the apparatus of smell, and the six of hearing, placed among the apparatus of audition; in addition to which, accidental osseous productions are occasionally met with, (the wormion and sesamoid, or triquetrous bones,) which are the inter-articular nuclei.

BONES OF THE HEAD, 20.

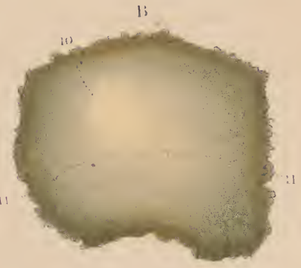
1. BONES OF THE CRANIUM, 8.

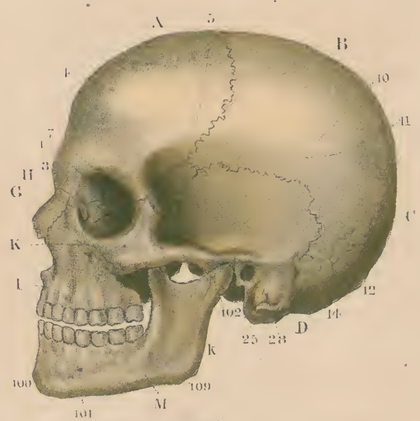
FUNDAMENTAL NAMES AND SITUATION.	USES	PECULIARITIES.
A FRONTAL BONE. Supra-orbitary, or præ-cranial.	The anterior support of the brain.	1 Supra-orbitary arch. 2 Fronto-zygomatic angle, or apophysis. 3 Fronto-nasal protuberances. 4 Frontal protuberances. 5 Temporal arch, (the anterior, or frontal portion.) 6 The orbitary vault. 7 Supra-orbitary hole. 8 Fronto-ethmoidal fissure, (or notch.) 9 Intra-frontal sinuses.
B PARIETAL BONES. Upper lateri-cranial.	Protectors of the sides of the brain.	10 Parietal protuberance. 11 Temporal arch, (posterior or parietal part.)
C OCCIPITAL BONE. Post-basi-cranial.	The support of the basis of the brain, (basi-cerebral rudimentary vertebra.	12 External occipital protuberance. 13 Upper occipital curved line. 14 Lower " " " 15 Vertical occipital crest. 16 Great occipital, or supra-vertebral hole. 17 Præ-condyloid hole. 18 Occipito-atloidal condyles. 19 Post-condyloid fossa. 20 Basilary prolongation, or apophysis. 21 Occipito-temporal, or post-petrous groove.
D TEMPORAL BONES. Inferior lateri-cranial.	The supporters of the middle cerebral lobes, the envelopes of the auditory organs, and fulcra of the masticatory powers.	22 Temporo-zygomatic apophysis, (zygomatic process.) 23 Glenoid, or temporo-maxillary cavity. 24 Glenoid fissure, (fissure of Glaserius.) 25 Tympano-extra-cranial hole, (external auditory.) 26 Styloid apophysis. 27 Stylo-mastoid hole. 28 Mastoid apophysis. a *Petrous, portion of the temporal bone.*: 29 Temporo-occipital groove; 30 Temporo-trachelian hole; 31 Trachelo-intra-cranial (carotid) canal; 32 Tympano-pharyngial duct (of Eustachius.); 33 Tympano-intra-cranial post-petrous duct, (internal auditory duct, or meatus.); 34 Tympano-intra-cranial præ-petrous duct, (hiatus fallopii.
E ETHMOID. Præ-basi-cranial bone.	The supporter of the olfactory lobes, and composing the olfactory sinuses.	35 Supra-ethmoidal apophysis (crista galli.) 36 Supra-ethmoidal holes (olfactory.) 37 Ethmoido-nasal fissure. 38 Vertical infra-ethmoidal table, or plate. 39 Upper ethmoidal turbinated bone. 40 Lower " " " (median.) 41 Ethmoidal cells. planum.) 42 Ethmoidal intra-orbitary surfaces, (os
F SPHENOID BONE. Medio-basi-cranial bone.	The supporter of the middle lobes of the brain, the key of the cranial bones, rudimentary basi-cerebral vertebra.	43 Optic, or chiasmatic commissural plane. 44 Post-orbitary (optic) hole. 45 Sphenoido-supra-orbitary wing, (apophysis, or lesser wing of Ingrassius.) 46 Post-orbitary sphenoidal groove, or fissure. 47 Median supra-sphenoidal gutter, (sella turcica.) 48 Channel of the sphenoido-petrous sinus. 49 Sphenoido-occipital plate, (square.) b *Sphenoido-temporal wing, (great wing, upper surface.)*: 50 Anterior Sphenoidal hole, (great round, or superr. maxillary.); 51 Middle sphen. hole. (oval, or lower maxillary.); 52 Poster. sphen. hole, (speno-spinous, small round.) c *Inferior posterior surface.*: 53 Lower sphenoidal crest, or post-vomerian; 54 Pterygoid, or post nasal apophysis; 55 Pterygoid fossa; 56 Post'r internal crest; 57 Supra pterygoid canal, (vidian.); 58 Pterygoido-staphyline trochlea, or staphyline hook; 59 External posterior crest. d *Anterior surface.*: 60 Sphenoidal sinusus; 61 Extra-orbitary plate; 62 Outer edge of the sphenomaxillary fissure; 63 Præ-pterygoid surface, (posterior wall of the pterygomaxillary channel, or fissure.) e *External surface.*: 64 Temporo-spheni-zygomatic fossa; 65 Part of the maxillo-spheni-zygomatic fossa.
G NASAL BONES. Anterior supra-facial.	Anterior and upper wall of the nose	66 Supra-nasal channel, on its posterior surface.
H LACHRYMAL BONES. (Unguis) posterior supra-facial.	Duct of the lachrymal sac, (reservoir.)	67 Lachrymal channel, (or groove.)
I SUPRA MAXILLARY BONES. Anterior median facial.	The resisting basis of mastication. Support of the eye. Outer wall of the nasal fossæ buccal vault.	f *Anterior surface.*: 68 Maxillo-nasal apophysis (ascending.) nasal process. 69 Lachrymal crest; 70 Orbitary floor. 71 Infra-orbitary canal; 72 Anterior maxillary - fossa, (canine, infra-orbitar.) 73 Sub-orbito-præ-maxillary hole; 74 Anterior nasal groove; 75 Supra-alveolar edge. alveolar process. 76 Infra-orbito-alveolar duct; 77 Supra maxillary zygomatic eminence, (malar process.) g *Posterior surface.*: 78 Inner edge of the spheno-maxillary fissure; 79 Anterior wall of the maxillo-spheni-zygomatic fossa h *Inner surface.*: 80 Maxillo-lachrymal channel; 81 Great maxillary sinus, (antrum highmorianum.); 82 Floor of the nasal fossæ; 83 Buccal vault; 84 Post-alveolar canal; 85 Groove of the maxillo-palatine hole; 86 Dental cavities, (alveoli, or sockets.)
K ZYGOMATIC BONES. (Malar.) lateral facial.	Outer wall of the temporo-zygomatic fossa, outer edge of the orbit.	87 Extra-orbitary edge. 88 Zygomato-frontal angle, or apophysis. 89 Zygomato-temporal apophysis, (zygomatic arch.) 90 Zygomato-supra-maxillary angle. 91 Post-zygomatic groove.
L PALATE BONES. Posterior facial.	Pharyngeal extremity of the nasal floor and palatine vault.	92 Staphyline edge. 93 Maxillo-palatine hole, (posterior palatine.) 94 Palato-vomerian crest. i *Palato-spheni-maxillary apophysis.*: 95 Obitar end; 96 Spheno-palatine hole; 97 Maxillary extremity. 98 Bottom of the pterygo-palati-maxillary groove.
M INFRA MAXILLARY BONE. Internal facial.	The agent of mastication.	99 Alveolar edges and alveoli. 100 Mental eminence, (process, or the symphysis of the chin.) 101 Dento-mental hole, (mental.) k *Sub-maxillary branch.*: 102 Infra-maxillary condyle; 103 Infra-maxillary apophysis; 104 Præ-condyloid groove; 105 Sub-maxillo-dental hole, (entrance to the inferior dentary canal.) 106 Post-mental eminence, (geni.) 107 Infra-maxillary internal crest. 108 Infra-maxillary edge, (lower.) 109 Infra-maxillary angle.
N HYOID BONE. Sub-facial.	Fulcrum for the muscles of deglutition, of the voice and of speech.	110 Basi-lingual edge. 111 Thyroid edge. 112 Posterior apophysis (greater cornu.) 113 Upper anterior apophysis (lesser cornu.)

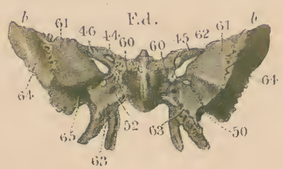
Note. All these bones, when articulated, form a whole composed of eminences and cavities. The *cranium*, when it is articulated, forms an elongated spheroid, which, on its lower surface, offers the great occipital medullary hole. The vomer and great intra-nasal turbinated bones, are described under the olfactory apparatus. Vide *Aesthesiography.*

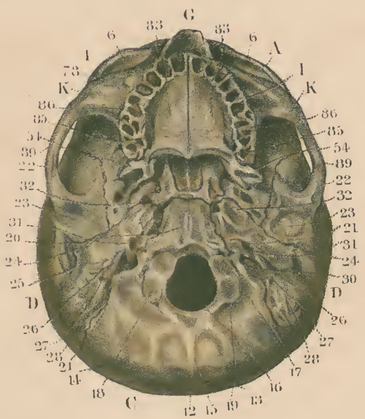
The *face* contains the orbital cavities, nasal fossæ, and palatine vault; and on its sides, the temporo-zygomatic fossæ. On it are observable the dorsi-nasal eminences, the zygomatic processes or cheek bones, the dental arches, the sub-maxillary angle, and the chin.

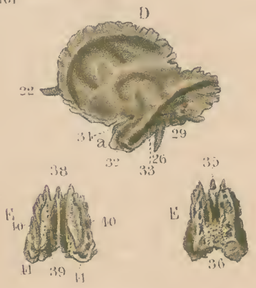
Osteography.

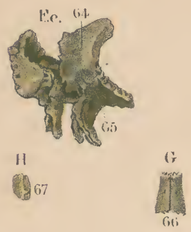


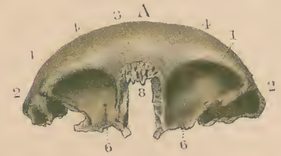


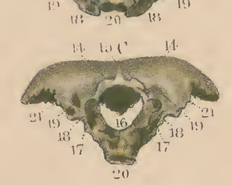


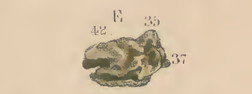


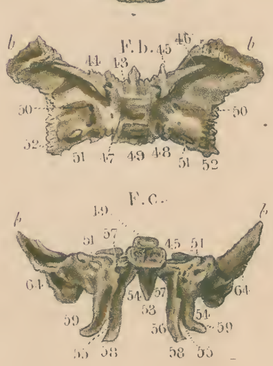


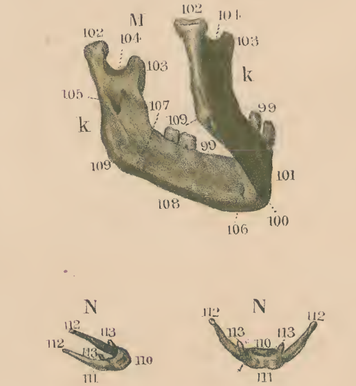












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OSTEOGRAPHY.—Continued.

BONES OF THE TRUNK, 57.

III. VERTEBRAL BONES.

Or the posterior bones of the Trunk, 24.

FUNDAMENTAL NAMES AND SITUATION.	FUNCTIONS.	PECULIARITIES.
A* 1st TRACHELIAN VERTEBRA, or ATLAS, infra-occipital, and ring shaped.	The support of the head and circle of rotation.	1 Anterior arch. 2 Atloido-occipital apophysis and articulating surface. 3 Atloido-axoidal articular apophysis. 4 Lateral apophyses, (transverse.) { 5 Latero-vertebral hole. 6 Lateral inter-atloido-occipital groove. 7 Posterior arch.
B* 2d TRACHELIAN VERTEBRA, or AXIS. (Odontoid, Dentata.)	Axis of rotation of the head.	8 Odontoid, or inter-atloidal process, or apophysis. 9 Upper and lower articulating surfaces, or apophyses. 10 Transverse, or lateral apophyses. 11 Latero-vertebral hole. 12 Lateral inter-axoido-atloidal groove. 13 Lateral inter-vertebral groove. 14 Posterior arch. 15 Spinous apophysis, or process.
C* 3d, 4th, 5th, 6th, & 7th, TRACHELIAN VERTEBRÆ. (Cervical.) the first segment of the column. (The seventh has been called *prominent*.)	Basis and support of the neck.	16 Body of the vertebra. 17 Upper and lower articulating surfaces. 18 Inter-vertebral grooves. 19 Transverse apophyses. 20 Latero-vertebral hole. 21 Vertebral arch. 22 Spinous apophysis.
D* DORSAL, or COSTAL VERTEBRÆ, 12 in number. The second section of the column.	Basis of the back and posterior support of the ribs.	23 Body of the vertebra. 24 Surface for articulation with the ribs. 25 Lateral post-costal apophysis, (transverse.) 26 The costal articular surface of the transverse apophysis, common to all except the two last. 27 Superior and inferior articulating surfaces. 28 Inter-vertebral groove. 29 Vertebral arch. 30 Spinous apophysis, the (5th, 6th, 7th and 8th, very much inclined downwards.)
E* LUMBAR VERTEBRÆ, 5 in number. The 3d segment of the column.	Basis of the loins.	31 Body of the vertebra. 32 Lateral apoyhyses. 33 Upper and lower articular surfaces. 34 Inter vertebral groove. 25 Vertebral arch. 36 Spinous apophysis.

IV. BONES OF THE CHEST.

Or anterior and upper lateral of the Trunk, 29.

FUNDAMENTAL NAMES AND SITUATION.	FUNCTIONS.	PECULIARITIES.
F* THE RIBS. 12 in number on either side. The lateri - thoracic bones, of which 7 are sternal and 5 asternal.	The protecting parietes of the thoracic organs and support of the respiratory muscles.	a *Anterior extremity.* { 37 Costo-chondro-sternal, for the seven first (from articulation being with the sternum for the seven true ribs.) 38 Costo - chondroidal, (or with the costal cartilages) for the following three. 39 Costo - abdominal, for the two last. b *Posterior extremity.* { 40 Costo-vertebral articulating surface, (or head.) 41 Costo-lateri-vertebral surface.
G* STERNUM. (Præ-thoracic bone.)	Supports the key of the ribs.	42 Supra-sternal groove (fourchette.) 43 Sterno-clavicular articular surface. 44 Chondroido-costal articular surfaces (articular cavities of the seven true ribs.) 45 Infra-sternal appendix, (xiphoid cartilage, ensiform process.)
H* CLAVICLE. Supra-thoracic bone.	The support of the scapula, and to act as a fulcrum to the head of the humerus.	c *Sternal end.* d *Scapular, or acromial end, (head.)*
I* SCAPULA, or omo-plata. Post - thoracic bone.	Fulcrum of the arm.	46 Supra-spinous fossa. 47 Post-scapular spinal crest, (spine of scapula.) 48 Infra-spinal fossa. 49 Præ - scapular surface, (v. Arthrography 41.) 50 Coracoid apophysis, or process. 51 Supra-scapular groove. 52 Acromion apophysis, or scapulo - clavicular. 53 Scapulo - humeral articular surface, (glenoid cavity.) 54 Scapular angle.

V. INFRA-ABDOMINAL BONES.

Or the lower bones of the Trunk, 4,

J* ILIAC BONES, or anterior pelvic. (The Pelvis.) (Ossa Innominata.)	The support of the viscera, and fulcrum of the lower limbs.	e *Iliac portion.* { 55 Iliac fossa and crest. 56 Posterior iliac surface. f *Pubic portion.* { 57 Pubic articulation, (symphysis pubis.) 58 Infra-pubic hole, (obturator.) 59 Infra-pubic arch. g *Ischiatic portion.* { 60 Ischiatic tuberosity, (tuber ischii.) 61 Ischiatic notch. 62 Pelvi - femoral articular cavity, (cotyloid, acetabulum.) 63 Spine of the ischium.
K* SACRUM, or poster'. pelvic bone. (Pelvis.)	The basis of the vertebral column (a series of five rudimental vertebræ.)	64 Sacro-vertebral articulating surface. 65 Posterior sacral holes. 66 Spinous processes. 67 Vertebro-sacral canal. 68 Sacro-iliac articular surface. 69 Anterior sacral holes. 70 End of the sacro-vertebral canal.
L* COCCYX. Infra-pelvic bone.	Tail bone (3 or 4 rudimental vertebræ.)	71 Coccygio-sacral articular surface. 72 Coccygio-sacral groove.

VI. BONES OF THE SCAPULAR LIMBS.

Or upper extremities, 60.

FUNDAMENTAL NAMES AND SITUATION.	FUNCTIONS.	PECULIARITIES.
M* HUMERUS. Bone of the arm.	1st lever of the scapular limbs.	h *Upper or scapular end, head, or tuberosity, and dicipetal groove.* i *Lower extremity.* { 73 Epicondyle or radial tuberosity. 74 The condyle (articulated with the radius.) 75 Epitrochlea, or cubital tuberosity, (small head.) 76 Trochlea, (articulated with the cubitus.) 77 Olecranon cavity.
N* CUBITUS. (Ulna.) The outer and posterior bone of the fore-arm.	Fundamental bone of the fore-arm, bone of the elbow, 2d lever of the scapular limbs.	j *Upper humeral extremity.* { 78 Olecranon apophysis. 79 Cubito - humeral cavity, (sigmoid.) 80 Superior cubito-radial articular surface. k *Lower carpal extremity.* { 81 Cubito - carpal - articular surface, (separated from the pyramidal bone of the wrist by fibro-cartilage.) 82 Lower cubito-radial articular surface, (head of the ulna.)
O* RADIUS, (externus of authors,) anterior and inner antebrachial bone.	Radius, or rotator round the ulna in pronation or supination.	l *Upper humeral extremity.* { 83 Radio-humeral articular surface. 84 Upper radio-cubital " " m *Lower carpal extremity.* { 85 Radio-carpal " " 86 Inf'. radio-cubital " "
P* BONES OF THE CARPUS. (wrist.)	Bones which serve to give greater freedom to the motions of the hands.	*1st Row, 4 carpi-radio-cubital bones.* { 87 *Scaphoid bone.* 88 *Semi-lunar bone.* 89 *Pyramidal bone.* 90 *Pisiform bone.* *2d Row, 4 carpo-metacarpal bones.* { 91 *Trapezium.* 92 *Trapezoid bone.* 93 *Great bone, (magnum.)* 94 *Unciform bone.*
Q* BONES OF THE METACARPUS. (supra-digital.)	Basis of the palm of the hand.	*5 Inter-carpo-phalangian bones.* { 95 1*st metacarpal bone.* 96 2*d* " " 97 3*d* " " 98 4*th* " " 99 5*th* " "
R* PHALANGES. (Digital bones.	Bones of prehension.	1st, 2d, 3d, 4th and 5th first phalanges of the thumb and fingers.
S* PHALANGINÆ. (Digital bones.)	*Idem.*	2d, 3d, 4th and 5th second phalanges of the fingers only.
T* PHALANGETTIÆ. (Digital bones.)	*Idem.*	1st, 2d, 3d, 4th and 5th third phalanges of the thumb and fingers.

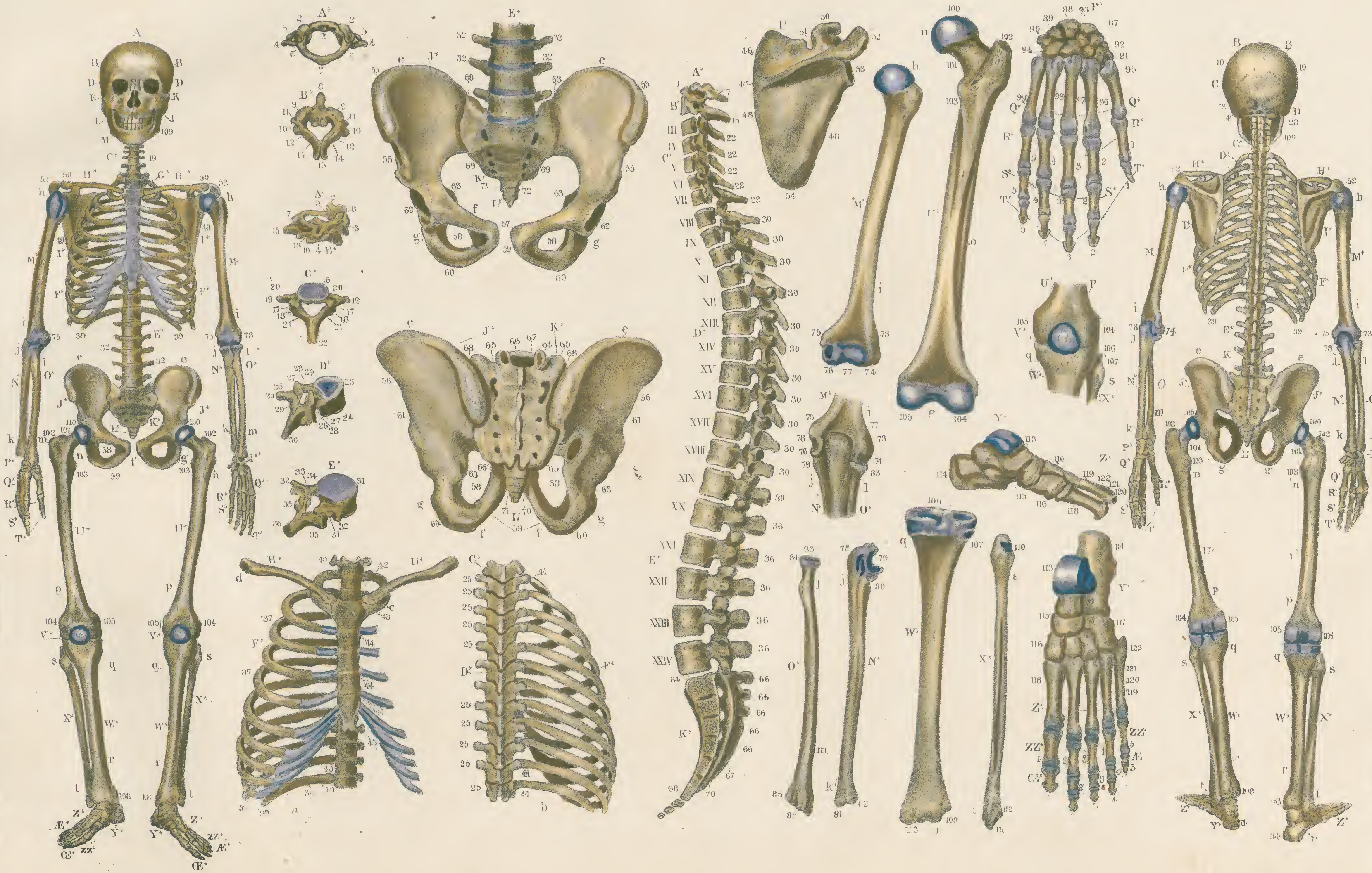
VII. BONES OF THE PELVIC MEMBERS.

Inferior extremities, 60.

FUNDAMENTAL NAMES AND SITUATION.	FUNCTIONS.	PECULIARITIES.
U* FEMUR. (thigh bone.)	Chief lever of the Pelvic limbs.	n *Pelvic extremity.* { 100 Head, or femoro - iliac spherical surface. 101 Neck of the femur. 102 Great trochanter. 103 Lesser "
		o *The rough line of the femur (linea aspera.)*
		p *Tibial extremity.* { 104 Outer condyle. 105 Inner condyle.
V* ROTULA. (Patella.) Præ-articular-femoro-tibial bone.	Rotula — return pully for the anterior muscles of the thigh.	
W* TIBIA. Fundamental bone of the leg.	2d lever of the Pelvic limbs.	q *Femoral extremity.* { 106 Tibio-femoral articular surface. 107 Tibio-peroneal art'. "
		r *Tarsal extremity.* { 108 Tibio-tarsal " " (inner ankle, or malleolus.) 109 Tibio-peroneal articular surface.
X* PERONE OR FIBULA. (Outer bone of the leg.)	An accessory bone, which increases the firmness of the standing posture.	s *Tibial, or upper extremity.* { 110 Tibial articular surface.
		t *Tarsal, or lower extremity, (outer ankle or malleolus.)* { 111 Peroneo-tarsal articular surface. 112 Lower peroneo-tibial articular surface.
Y* BONES OF THE TARSUS. (Infra-malleolar.)	Support of the leg and thigh in standing.	*2 Tarso-tibial bones.* { 113 Infra-tibial bone, or *Astragalus.* 114 *Calcaneum*, or bone of the heel, (os calcis.)
		1 Inter-tarsal bone. { 115 *Scaphoid bone.*
	Bones which serve to maintain equilibrium.	*4 Tarso-metatarsal bones.* { 116 *Three cuneiform bones.* 117 *The cuboid bone.*
Z* BONES OF THE METATARSUS. Post digital.	*Idem.*	*5 Inter-tarso-phalangeal bones.* { 118 1st *metatarsal bone.* 119 2*d* " " 120 3*d* " " 121 4*th* " " 122 5*th* " "
ZZ* PHALANGES. 5 digital bones.	*Idem.*	1st, 2d, 3d, 4th and 5th first phalanges for the five toes.
Æ* PHALANGINÆ. 4 digital bones.	*Idem.*	2d, 3d, 4th and 5th second phalanges for the four last toes.
Œ* PHALANGETTIÆ. 5 digital bones.	*Idem.*	1st, 2d, 3d, 4th and 5th third phalanges for the five toes.

Osteography.

PL. II



Drawn by J. Bisneu

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ARTHROGRAPHY.

The joints of the bones are composed of ligaments, cartilages and fibro-cartilages; in the following nomenclature, neither the cartilages which cover the ends of the bones, nor the synovial membranes, are included.

FIRST DIVISION. SUPRA DIAPHRAGMATIC ARTICULATIONS.

EMPORO-MAXILLARY ARTICULATION. 3 lig.
1 Temporo-maxillary ligament (external lateral.)
2 Spheno-maxillary ligament, (internal lateral.)
3 Stylo-maxillary ligament, (oblique or posterior.)
4 Temporo-maxillary fibro-cartilage.

OCCIPITO-ATLOIDAL ART. 4 lig.
5 Basilo-atloidal ligament, (anterior articular.)
6 Occipito-atloidal lig. (posterior articular.)
7 *Anterior* occipito-atloidal obturator lig.
8 Posterior occipito-atloidal obturator lig.

AXOIDO-ATLOIDAL ART. 3 lig.
9 Post-odontoido-atloidal lig. (transverse or cruciform lig. of the atlas.)
10 Anterior axoido-atloidal ligament, (anterior articular.)
11 Posterior axoido-atloidal ligament, (posterior articular.)

OCCIPITO-AXOIDAL ART. 2 lig.
12 Basilo-axoidal (straight) lig.
13 Occipito-axoidal (oblique) lig.

VERTEBRAL ART. 5 lig.
14 Præ-vertebral (anterior vertebral) lig.
15 Inter-vertebral, (posterior vertebral) lig.
16 Inter-arco-vertebral (yellow) lig.
17 Inter-spino-vertebral lig. (inter-spinal.)
18 Post-spino-vertebral (super-spinal) lig.
19 Inter-vertebral fibro-cartilages.

VERTEBRO-COSTAL ART. 5 lig.
20 Vertebro-præ-costal (anterior or radiated) ligaments.
21 Vertebro-chondro-costal (inter-articular) lig.
22 Vertebro-post-costal (costo-transverse) lig.
23 Vertebro-infra-costal (middle costo-transverse) lig.
24 Vertebro-supra-costal (lower costo-transverse) lig.

STERNO-COSTAL ART. 3 lig.
25 Sterno-præ-costal (anterior radiated) ligaments.
26 Sterno-post-costal (posterior radiated) lig.
27 Infra-sterno-costal lig.
28 Sterno-costal cartilages.

STERNO-CLAVICULAR ART. 4 lig.
29 Inter-clavicular (transverse) lig.
30 Sterno-præ-clavicular (anterior) lig.
31 Sterno-post-clavicular (posterior sterno-clavicular) lig.
32 Costo-clavicular lig.
33 Sterno-clavicular (inter-articular) fibro-cartilage.

SCAPULO-CLAVICULAR ART. 3 lig.
34 *Upper* acromio-clavicular lig.
35 Lower " " " (the capsular.)
36 Coraco-clavicular lig. (consisting of the conoid and trapezoid fasciculi.)

SUPRA-SCAPULAR ARTICULATION. 2 lig.
37 Accromii-coraco-scapulary lig. (acromio-coracoid.)
38 Supra-scapulary lig.

SCAPULO-HUMERAL ART. 2 lig.
39 Scapulo-humeral (capsular) lig.
40 Coraco-humeral (accessory) lig.
41 Scapulo-humeral (glenoidal) fibro-cartilage.

HUMERI-RADIO-CUBITAL ART. 4 lig. (THE ELBOW.)
42 Epicondylo-radial (external lateral) lig.
43 Epitrochleo-radial (anterior) lig.
44 Epitrochleo cubital (internal lateral) lig.
45 Humero-cubital (posterior) lig.

CUBITO-RADIAL ART. 3 lig.
46 Cubito-circa-radial (annular) lig.
47 Small cubito-radial (round or upper) lig.
48 Great " " (inter-osseous or lower) ligament.
49 Cubito-radial-fibro-cartilage (triangular cartilage.)

RADIO-CUBITO-CARPAL ART. 4 lig.
50 Radio-carpal (internal lateral) lig. (externum of authors.)
51 Cubito-carpal (external lateral) lig. (internum of authors.)*
52 Radio-dorsi-carpal (anterior) lig. (posterior of authors.)
53 Radio-palmi-carpal (posterior) lig. (anterior of authors.)

CARPAL ART.
54 Inter-carpal (inner) lig. (outer of authors)
55 Extra-carpal (outer) lig. (inner of authors.)
56 Carpo-dorsal lig. (anterior) (posterior of authors.)
57 Inter-carpal lig. (inter-osseous of the carpus.)
58 Carpo-palmar (posterior) lig. (anterior of authors.)

CARPO-METACARPAL ART.
59 Carpo-pollici-metacarpal lig. (capsular of the metacarpus.)
60 Carpo-dorsi-metacarpal (anterior) lig. (posterior of authors.)
61 Carpo-palmi-metacarpal (posterior) lig. (anterior of authors.)

METACARPAL ART.
62 *Dorsal* metacarpal lig.
63 *Palmar* supra-metacarpal lig.
64 *Palmar* infra-metacarpal lig.

METACARPO-PHALANGIAN ART. 3 lig.
65 Metacarpo-palmi-phalanginean lig.
66 Metacarpo-inter-phalanginean lig.
67 Metacarpo-extra-phalanginean lig.

PHALANGO-PHALANGINEAN ART. OF THE HAND. 3 lig.
68 Phalango-palmi-phalangian lig.
69 Phalango-inter-phalangian lig.
70 Phalango-extra-phalangian lig.

PHALANGINO-PHALANGETTIAN ART. OF THE HAND. 5 lig.
71 Phalangino-palmi-phalangettian lig.
72 " inter " "
73 " extra " "

* In its natural position the radius is placed on the inner side.

SECOND DIVISION. INFRA-DIAPHRAGMATIC ARRTICULATIONS.

VERTEBRO-SACRAL ART. 5 lig.
74 Præ-vertebro-sacral lig. (continuation of the anterior vertebral.)
75 Intra-vertebro-sacral lig. (continuation of the posterior, or rachidial ligament.)
76 Inter-vertebro-sacral (yellow) lig.
77 Inter-spini-vertebro-sacral lig. (vertebral interspinous.)
78 Post-spini-vertebro-sacral, (supra-spinous ligament.)
79 Vertebro-sacral-fibro-cartilage.

VERTEBRO-ILIAC ART. 5 lig.
80 Vertebro-iliac lig. (ilio-lumbar.)

ILIO-SACRAL ART. 4 lig. (SACRO-ILIAC SYMPHYSIS.)
81 Iliaco-sacral (*anterior*) lig. (sacro-iliac.)
82 " " (*posterior*) lig. (sacro-spinal.)
83 Ischio-sacral (*posterior*) lig. (Great sacro-sciatic.)
84 Ischio-sacral (*anterior*) lig. (Small sacro-sciatic.)

COCCYGIO-SACRAL ART. 2 lig.
85 Coccygio-præ-sacral lig. (anterior) (sacro-coccygeal.)
86 Coccygio-post-sacral lig. (posterior) (sacro-coccygeal.)
87 Coccygio-sacral fibro-cartilage.

PUBIC ART. 3 lig.
88 Supra-pubic (anterior) lig.
89 Infra-pubic lig. (triangular or arcuatum .)
90 Iliaco-pubic lig.
91 Inter-pubic cartilage, (symphysis pubis.)
92 Infra-pubic (obturator) membrane.

ILIO-FEMORAL ART. 2 lig.
93 Ilio-circa-femoral (capsular or cotyloid) lig.
94 Inter-ilio-femoral (round inter-articular.)
95 Ilio-femoral fibro cartilage (cotyloid.)

FEMORI-PERONEO-TIBIAL ART. 6 lig.
96 Supra-tibial-rotular lig. (lig. patellæ.)
97 Femoro-tibial (*internal*) lig. (internal lateral.)
98 Femoro-peroneal (external lateral) lig.
99 Femoro-tibial (*posterior*) lig.
100 Inter-femoro-tibial (*anterior*) lig. (anterior crucial.)
101 Inter-femoro-tibial, (*posterior*) (posterior crucial.)
102 Femoro tibial (semilunar, outer) fibro-cartilages.

TIBIO-PERONEAL ART. 7 lig.
103 *Superior* præ-tibio-peroneal lig. (anterior.)
104 *Superior* post-tibio-peroneal lig. (posterior.)
105 *Upper* inter-tibio-peroneal lig. (great inter-osseous lig. of the leg.)
106 *Lower* inter-tibio-peroneal lig. (small inter-osseous lig. of the leg.)
107 *Lower* præ-tibio-peroneal lig. (anterior.)
108 *Lower* post-tibio-peroneal lig. (posterior.)
109 Supra-tibio-peroneal lig. (inter-malleolar, or transverse.

TIBIO-PERONEO-TARSAL ART. 5 lig.
110 *Anterior* tibio-tarsal lig.
111 *Internal* tibio-tarsal lig. (internal lateral.)
112 *Anterior* peroneo-tarsal lig.
113 *Posterior* peroneo-tarsal.
114 External peroneo-tarsal, (external lateral.)

TARSAL ART. 23 lig.
115 Calcaneo-astragali-post-tarsal lig.
116 " " inter-tarsal lig.
117 Calcanei-scaphoido-supra-tarsal lig.
118 " " infra " "
119 " cuboido-supra-tarsal lig.
120 " " infra " "
121 Scaphoido-astragali-supra-tarsal.
122 Scaphoido-cuboido-supra-tarsal lig.
123 " " infra-tarsal lig.
124 1st, 2d and 3d scaphoido-cunei-supra-tarsal ligaments.
125 1st, 2d and 3d scaphoido-cunei-supra-tarsal ligaments.
126 Cunei-supra-tarsal lig.
127 Cunei-infra-tarsal lig.
128 Cunei-cuboido-supra-tarsal lig.
129 Cunei-cuboido-infra-tarsal lig.

TARSO-METATARSAL ART. 8 lig.
130 Supra-cunei-metatarsal lig.
131 Supra-cuboido-metatarsal lig.
132 Infra-cunei-metatarsal lig.
133 Infra-cuboido-metatarsal lig.

METATARSAL ART. 4 lig.
134 Supra-metatarsal lig. (transverse dorsal.)
135 Infra-metatarsal (*posterior*) lig. (posterior transverse plantar.)
136 Inter-metatarsal (inter-osseus) lig.
137 Infra-metatarsal (*anterior*) lig. (anterior transverse.)

METATARSO-PHALANGIAN ART. 3 lig.
138 Metatarso-infra-phalangian lig. (inferior.)
139 " inter-phalangian lig. (internal lateral.)
140 " extra-phalangian lig. (external lateral.)

PHALANGO-PHALANGINEAN ART. OF THE FEET. 3 lig.
141 Phalango-infra-phalangian lig.
142 " inter " "
143 " extra " "

PHALANGINO-PHALANGETTIAN ART. 3 lig.
144 Phalangino-infra-phalangettian lig.
145 " inter " "
146 " extra " " (**)

(*) The more common denominations of the ligaments of the five preceding articulations are the superior, inferior, posterior, external, *dorsal and plantar* ligaments. The two last being the most important, are often alone described.—*Tr.*

Arthrography.

PL. III

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THE total number of muscles in the human body, which constitute the apparatus of locomotion, is 220 on either side, not including the 3 muscles of hearing, the 5 of the larynx, the diaphragm or septum medium, the 6 interspinal, and 11 inter-transversal of the neck, the 5 of the loins, and the cremaster, or cutanei-extra-testicular muscle.

First Division. Supra-diaphragmatic Muscles, 147.

MUSCLES OF THE HEAD AND NECK, 66.

A. MUSCLES OF FACIAL EXPRESSION, 27.

NAMES OF REGIONS.	DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS ACCORDING TO USES OR FUNCTIONS.
I Reg. EPICRANIO-FRONTAL. 3 muscles.	1 Occipito-cutanei-frontal.	Epicranial, (occipito-frontalis.)	Tensor of the forehead when the occipital muscr. planes contract; perpendicular wrinkler of the skin of the forehead, when the anterior muscular planes contract.
	2 Supra-orbito-frontal.*	Corrugator supercilii.	Adductor of the eyebrows, and tranversal wrinkler of the forehead.
	3 Supra-naso-cutanei-frontal.	Pyramidalis nasi.	Depressor of the skin of the forehead.
II Reg. AURICULAR. 3 muscles.	4 Mastoido-post-auricular.	Auricularis posticus.	Post-motor of the auricle, or concha of the ear.
	5 Aponeurosi-supra-auricular.	Attollens auriculam.	Elevator of the auricle, and tensor transversally of the frontal aponeurosis.
	6 Aponeurosi-præ-auricular.	Auricularis anticus.	Præ-motor of the auricle and tensor of the frontal aponeurosis transversally.
III Reg. PALPEBRAL. 2 muscles.	7 Supra-maxillo-cutanei-palpebral.	Orbicularis palpebrarum, or palpebralis anticus.	Constrictor of the eyelids.
	8 Sphenoido-supra-palpebral.	Palpebral posterior, or intra-orbitary (levator palpebræ superioris.)	Elevator of the upper eyelid.
IV Reg. CUBITO-OCULAR. 6 muscles.	9 Sphenoido-supra-ocular.	Superior straight muscle of the eye, (rectus sup. oculi.)	Elevator of the globe of the eye.
	10 Sphenoido-infra-ocular.	Inf. straight of the eye.	Depressor " "
	11 Sphenoido-intra-ocular.	Int. " "	Adductor " "
	12 Sphenoido-extra-ocular.	Ext. " "	Abductor " " — Post-motor of the globe of the eye when the action of all four is simultaneous.
	13 Sphenoido-trochlei ocular.	Great oblique, or obliquus superior oculi.	Rotator of the globe downwards and outwards. — Præ-motors & adductors of the globe of the eye when they act simultaneously.
	14 Supra-maxillo-ocular.	Obliquus minor, inferior oculi.	Rotator of the globe upwards and outwards.
V Reg. SUPRA-MAXILLO-NASAL. 3 muscles.	15 Supra-maxillo-cutanei-nasal.	Transverse of the nose, (compressor nasi.)	Corrugates the skin of the alæ of the nose.
	16 Supra-maxillo-labii-nasal.	The bifid, or bifurcated muscle of the face, (levator lab. super. alæque nasi.)	Common elevator of the upper lip and alæ of the nose.
	17 Supra-maxillo-alveoli-nasal.	Myrtiform, or infra-nasal. (dep. alæ nasi.)	Depressor of the alæ of the nose.
VI Reg. SUPRA-MAXILLO-LABIAL. 4 muscles.	18 Supra-maxillo-labial.	Lesser oblique of the upper lip. (levator labii superioris.)	Proper elevator of the upper lip.
	19 Supra-maxillo-anguli-labial.	Small vertical, (or canine) of the upper lip, (lev. anguli-oris.)	Elevator of the commissure of the lips.
	20 Small zygomato-labial.	Great ant. oblique of the upper lip. (zygomaticus minor.)	Lateral elevator of the commis. of the lips.
	21 Great zygomato-labial.	Great posterr. " " " (zygomaticus major.)	Elevator of the commissure of the lips which it draws backwards and outwards.
VII Reg. INTER-MAXILLO-LABIAL. 2 muscles.	22 Alveoli-maxillo-labial.	Buccinator or transverse of the face.	Draws the lips backwards and extends the commissures.
	23 Lab. or musculo-cutanei-labial.**	Orbicular. oris, of the lips.	Constrictor of the lips, or sphincter of the mouth.
VIII Reg. INFRA-MAXILLO-LABIAL. 3 muscles.	24 Infra-maxillo-anguli-labial.	Triangular of the chin, (labiorum) (depressor anguli oris.)	Depressor of the angle of the lips.
	25 Infra-maxillo-labial.	Square muscle of the chin, (quadratus genæ.)	" " lower lip.
	26 Mento-cutanei-labial.	Levator menti, vel labii inf.	Elevator of the skin of the chin and lower lip.
IX Superficial Reg. THORACO-LABIAL.	27 Thoraco-cutanei-labial.	Cuticular, or wide superficial muscle of the neck, (platysma myoides) (latissimus colli.)	Lateral depressor of the lower lip, and corrugator of the skin of the neck.

B. THE MASTICATORY MUSCLES, 4.

X Reg. TEMPORO-INFRA-MAXILLARY. 2 muscles.	28 Zygomato-infra-maxillary.	Messeter, or lateral square muscle of face.	Elevator of the lower jaw, or masticator.
	29 Arcadi-temporo-infra-maxillary.	Temporalis, or crotaphites.	" of the rami of the lower jaw.
XI. Reg. PTERYGO-INFRA-MAXILLARY. 2 muscles.	30 Pterygo-condyli-infra-maxillary.	External, or pterygoideus minor.	Præ-motor of the lower jaw.
	31 Pterygo-anguli-infra-maxillary.	Pterygoideus internus, or major.	Adducts the lower jaw, and moves it to one side.

* Is blended with, and lost in the muscular fibres of the frontal, which adhere to the skin of the forehead.
** This muscle is constituted by the extremities of all the muscles of expression, both supra and infra maxillary.

C. MUSCLES OF DEGLUTITION, 17.

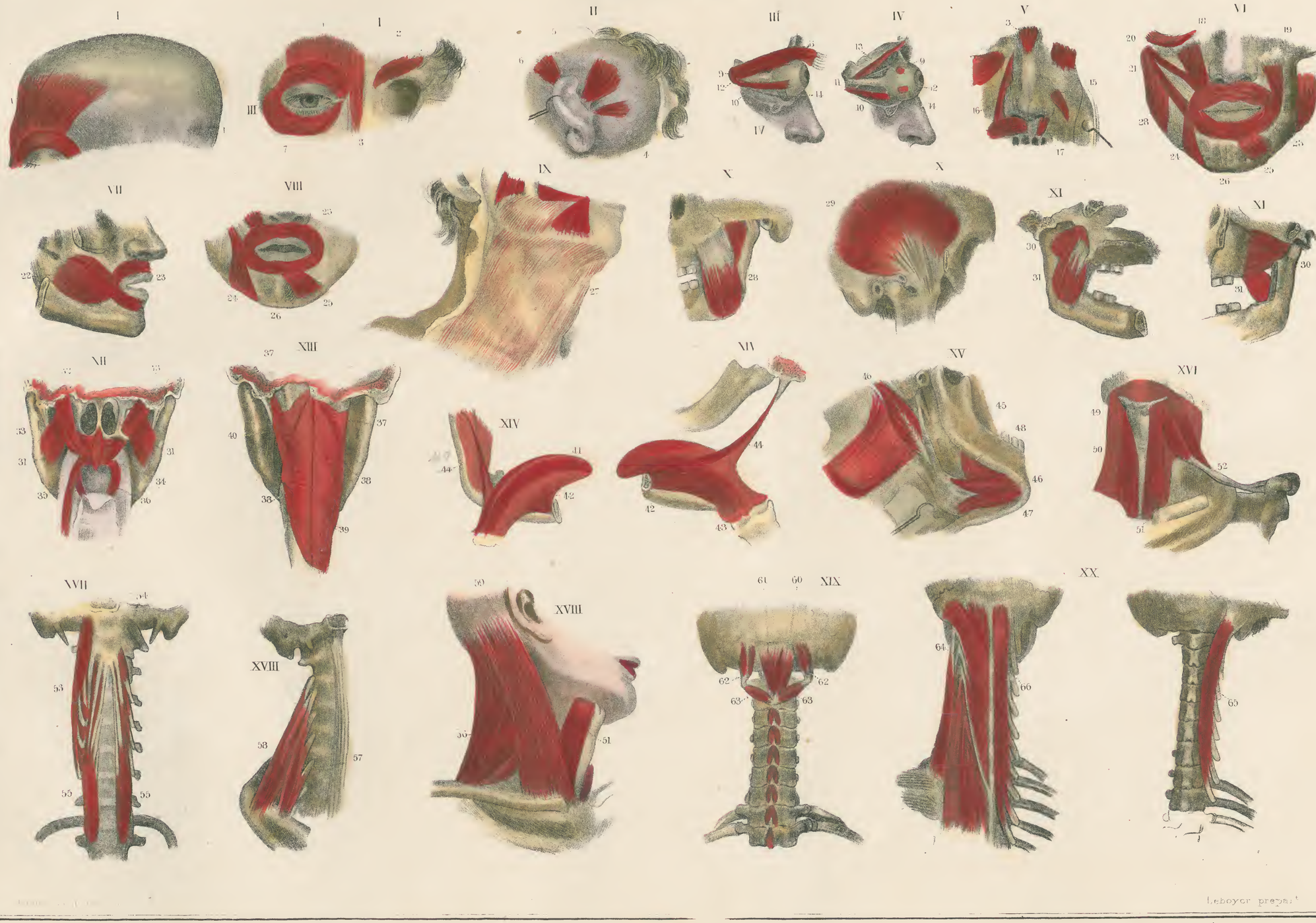
NAMES OF REGIONS.	DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS ACCORDING TO USES OR FUNCTIONS.
XII Reg. PTERYGO-STAPHYLIN, OR PALATINE. 5 muscles.	32 Petro-staphylin.	Internal or upper peristaphylin, (levator palati mollis.)	Elevator of the velum of the palate.
	33 Pterygo-staphylin.	External or lower peristaphylin, (circumflexus palati.)	Tensor of the velum of the palate.
	34 Palato-staphylin.	Staphylin, (levater uvulæ).	Elevator of the uvula.
	35 Pharyngo-staphylin.	Posterior pillar of the velum palati. (Palato-pharyngæus.)	Depressor of the velum and elevator of the pharynx.
	36 Glosso-staphylin.	Anterior pillar of the velum palati. (Constrictor isthmi faucinm.)	Constrictor of the isthmus of the fauces, elevator of the base of the tongue, depressor of the velum of the palate.
XIII Reg. PHARYNGEAL, 4 muscles.	37 Pterygo-pharyngeal.	Three posterr. crucial or wide musc. (constrictor pharyngæus, upper, middle and lower) of the pharynx.	Peristaltic constrictors of the pharynx.
	38 Hyoido-pharyngeal.		
	39 Cricoido-pharyngeal.		
	40 Stylo-pharyngeal.	Lateral or small pharyngæus.	Elevator of the pharynx.
XIV Reg. GLOSSAL, OR LINGUAL. 4 muscles.	41 Glossal.	Lingualis, or proper m. of the tongue.	Proper constrictor and retractor of the tongue.
	42 Post-mento-glossal.	Median infra-lingual-mental. (genio-glossus.	Præ-motor and depressor of the tongue, (which it carries forward.)
	43 Hyoido-glossal.	Basi, or infra-lateral-lingual. (hyo-glossus.)	Depressor of the base of the tongue and elevator of the os hyoides.
	44 Stylo-glossal.	Oblique post-lingual. (stylo-glossus.)	Retractor and lateralizer of the base of the tongue.
XV Reg. SUPRA-HYOIDAL, OR INFRA-MENTAL. 4 muscles.	45 Stylo-hyoidal.	Cervical perforated. (stylo-hyoideus.)	Elevator and post-motar of the os hyoides.
	46 Mastoido-mento-hyoidal.	Digastricus, or perforating cervical.	Depressor of the lower jaw, and elevator of the os hyoides, (acts in gaping.)
	47 Post-mento-hyoidal.	Transverse infra-mental. (mylo-hyoideus.)	Elevators and præ-motors of the hyoid bone, and depressors of the lower jaw.
	48 Infra-maxillo-hyoidal.	Obl. infra-mental. (genio-hyoideus.)	

D. MUSCLES OF THE NECK, 13.

XVI Reg. HYOIDO-THYROIDAL, OR ANTERIOR SUPERFICIAL CERVICAL. 4 muscles.	49 Hyoido-thyroidal,	Supra-thyroid, or short thyroid. (thyro-hyoideus.)*	Depressor of the os hyoides and elevator of thyroid cartilage.*
	50 Sterno-thyroidal.	Infra-thyroid, or long thyroidal.	Depressor of the thyroid cartilage.
	51 Sterno-hyoidal.	Infra-hyoidal. (anterior or straight.)	Depressor of the os hyoides.
	52 Scapulo-hyoidal.	Infra-hoyoidal. (lateral or oblique) (omo-hyoideus.)	Depressor and post-motor of the os hyoides.
XVII Reg. ANTE-TRACHELIAN, OR DEEP ANTERIOR CERVICAL. 3 muscles.	53 Great basilo-trachelian.	Great anterior straight muscle of the neck, (rectus anticus major.)	Flexor of the head forwards.
	54 Small " "	Small " " " " " (rectus anticus minor.)	Flexor of the head upon the first vertebra.
	55 Præ-dorso-trachelian.	Long m. of the neck. (longus colli.)	Flexor of the vertebræ of the neck.
XVIII Reg. LATERO-TRACHELIAN, OR LATERAL CERVICAL. 4 muscles.	56 Occipito-lateri-trachelian.	Lateral straight muscle of the neck. (rectus capitis lateralis.)	Inclines the head to one side.
	57 *Anterior*-costo-trachelian.	Scalenus anterior. (anticus.)	Lateral depressor of the neck, and elevator of the first rib.
	58 *Posterior*-costo-trachelian.	" posterior. (posticus.)	Lateral depressor of the neck, and elevator of the first two ribs.
	59 Præ-trachelian-sterno-mastoidal.	Great anterior lateral oblique muscle of the neck. (Sterno-cleido-mast.)	Depressor and rotator of the head forwards.
XIX Reg. POST-TRACHELIAN, OR DEEP POSTERIOR CERVICAL. 4 muscles.	60 Occipito-axoi-trachelian.	Great posterior rectus muscle of the neck. (posticus major.)	Inclines the head backwards, and slightly rotates it.
	61 Occipito-atloi-trachelian.	Small posterior rectus muscle of the neck. (posticus minor.)	Extensor of the head on the atlas.
	62 Post-mastoido-trachelian.	Upper oblique muscle of the neck.	Inclines the head backward and to one side, and rotates it forward.
	63 Atloido-axoi-trachelian.	Lower oblique of the neck.	Rotator of the atlas upon the axis or second cervical vertebra.
XX Superficial Reg. POST-TRACHELIAN, OR MEDIAN POSTERIOR CERVICAL. 3 muscles.	64 Mastoido-dorsi-trachelian.	Splenius.	Extends the head, or inclines it backward and a little to its own side.
	65 Mastoido-trachelian.	Lesser complexus. (minor.)	Extensor and rotator of the head.
	66 Occipito-dorsi-trachelian.	Great complexus. (major.)	Extends or inclines the head backwards.

* The thyroid cartilage is described with the vocal apparatus, under Splanchnography.

Myography.



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MUSCLES OF THE TRUNK, (Upper part), 37.

A. MUSCLES OF THE THORAX, 29.

NAMES OF REGIONS.	DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS ACCORDING TO USES OR FUNCTIONS.
XXI Reg. ANTE-COSTAL, OR ANTERIOR THORACIC. 3 muscles.	67 Humero-sterni-costal.	Great ante-pectoral (pectoralis major,)	Adducts the arm and dilates the thorax, (a muscle of inspiration and motion.)
	68 Coracoido-costal.	Little " " (pectoralis minor.)	Præ-motor of the shoulder, and elevator of the first five ribs, (mus. of inspiration.)
	69 Clavículo-costal.	Sub-clavius, or upper pectoral.	Elevator of the first rib, and præ-motor of the clavicle, (m. of inspiration.)
XXII Reg. LATERI-COSTAL, OR LATERAL THORACIC. 1 muscle.	70 Scapulo-costal.	Great denticulated, or lateral pectoral, (serratus major.)	Præ-motor of the scapula, and approximates the ribs to each other, (m. of inspir^{n}.)
XXIII Reg. POST-COSTAL, OR POSTERIOR THORACIC. 2 muscles.	71 Dorso-costal.	Posterior upper small denticulated. (serratus posticus superior.)	Elevator of the 2d, 3d, 4th, and 5th ribs, (mus. of inspiration.)
	72 Lumbo-costal.	Poster. inferior " " (serratus posticus inferior.)	Lowers the last 4 ribs, (m. of inspiration.)
XXIV Reg. DEEP-COSTAL, OR INTERNAL THORACIC 23 muscles.	73 *Eleven* vertebro-intercostal *muscles.*	Inter-costales externi.	Approximates the ribs to each other and dilates the thorax, (m. of inspiration.)
	74 *Eleven* sterno-intercostal *muscles.*	Inter costales interni.	Ditto.
	75 Sterno-costal.	Triangularis sterni, or internal antepectoral.	Constricts the thorax, and approximates the ribs to the sternum, (m. of expiration.)

B. SCAPULAR MUSCLES, 8.

XXV Reg. SUPRA AND INTRA-SCAPULAR, 3 muscles.	76 Occipito-dorsi-scapular.	Trapezius, or cucullaris.	Post-motor of the head, elevator and adductor of the scapula, elevator of the trunk towards the shoulders.
	77 Dorso-scapular.	Rhomboideus.	Adductor of the scapula towards the vertebral column, and upwards.
	78 Trachelo-scapular.	Angular m. of the scapula, (lev. scapulæ.)	Elevator and adductor of the scapula, post-motor of the head and neck towards the scapula.
XXVI Reg. SUPERFICIAL SCAPULAR, 4 muscles.	79 *Upper* humero-post-scapular.	Supra-spinatus.	Elevator and post-motor of the head of the humerus, abductor of the scapula.
	80 *Median* humero-post-scapular.	Infra-spinatus.	Post-motor and rotator of the arm towards the scapula, which it abducts.
	81 *Lower* humero-post-scapular.	Small round muscle, (teres minor.)	Post-motor depressor, and rotator of the head of the humerus, and abductor of the scapula.
	82 Humero-anguli-scapular.	Great " " (teres major.)	Adductor, depressor and post-motor of the arm, which it rotates inwards; abductor and elevator of the scapula.
XXVII Reg. DEEP SCAPULAR, 1 muscle.	83 Humero-præ-scapular.	Sub-scapularis.	Adductor and rotator of the arm inwards.

MUSCLES OF THE SCAPULAR OR THORACIC LIMBS.

A. MUSCLES OF THE ARM, 5.

XXVIII Reg. SUPRA-HUMERAL, OR THAT OF THE SHOULDER. 1 muscle.	84 Scapulo-clavi-humeral.	Deltoides.	Elevator of the arm, and ante-motor, or post-motor, according as its fibres, anterior or posterior, act.
XXIX Reg. POST-HUMERAL, OR POSTERIOR BRACHIAL. 1 muscle.	85 Scapulo-cubiti-hameral.	Triceps extensor cubiti.	Extends the fore-arm on the arm, or the arm on the fore-arm, and abducts the scapula.
XXX Reg. ANTE-HUMERAL, OR ANTERIOR BRACHIAL, 3 muscles.	86 Scapulo-radial, supra-humeral.	*Diceps of the arm, or brachialis anticus, flexor cubiti.)	Flexor of the fore-arm on the arm, or of the arm on the fore-arm; supinates the fore-arm slightly; elevates the arm slightly, and lowers the shoulder.
	87 Coraco-humeral.	Brachialis superior. (Coraco-brach.)	Adductor and præ-motor of the arm.
	88 Cubito-humeral.	" inferior. (Brach. internus.)	Flexor of the fore-arm on the arm, or of the arm on the fore-arm.

* Instead of Biceps.

** As the natural position of the fore-arm requires that the back of the hand be turned forward, the radius is placed upon the inner part, and the ulna upon the outer, the palm of the hand being backwards.

CONTINUATION OF THE MUSCLES OF THE SCAPULAR LIMBS.

B. MUSCLES OF THE FORE-ARM, 20.

NAMES OF REGIONS.	DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS ACCORDING TO USES OR FUNCTIONS.
XXXI Reg. SUPERFICIAL EPICONDYLO-EPITROCHLEAN, OR SUPERFICIAL ANTE-BRACHIAL. 10 muscles.	89 Radio-supra-epicondyloid.	1st Internal or superficial radial, (supinator longus.)	Supinator or rotator of the fore-arm outwards, and slightly flexes the fore-arm on the arm.
	90 Metacarpo-supra-epicondyloid.	2d Radial internal. (1st radialis externus of authors.)** (Extensor carpi radialis longior.)	Extensor of the hand, which it inclines towards the radius.
	91 Phalangetto-digiti-epicondyloid.	Great dorsal ante-brachial, or anterior superficial radial. (Extensor digitorum communis.)	Common extensor of the fingers.
	92 Phalangetto-digituli-epicondyloid.	Small dorsal ante-brachial, or median superficial dorsal. (Exten. prop. minimi digiti.)	Proper extensor of the little finger.
	93 Metacarpo-cubiti-epicondyloid.	Anterior cubital (posterior of the ancients. extensor carpi ulnaris.)	Extensor of the hand, which it inclines towards the ulna.
	94 Cubito-epicondyloid.	Anconeus, or triangular projecting muscle of the elbow.	Extensor and supinator of the fore-arm.
	95 Carpo-cubiti-epitrochlean.	External cubital, (anterior of the ancients, flexor carpi ulnaris.)	Flexor of the hand, and bends in towards the ulna.
	96 Palmi-epitrochlean.	Small palmaris.	Tensor of the palmar aponeurosis.
	97 Metacarpo-epitrochlean.	Palmaris longus.	Flexor of the hand towards the radius.
	98 Radio-epitrochelean.	The round muscle of the fold of the arm, or oblique ante-brachial. (pronator teres.)	Pronator, or rotator of the fore-arm inwards.
XXXII Reg. DEEP EPICONDYLO-EPITROCHLEAN, OR MIDDLE ANTE-BRACHIAL. 2 muscles.	99 Metacarpo-epicondyloid.	3d internal radial, (2d of the ancients.) (Extensor carpi rad. brev. or radialis ext. brevis.)	Extensor of the hand, which it bends towards the radius.
	100 Phalangino-digiti-epitrochlean.	Flexor digitorum sublimis, vel perforatus.	Flexor of the second phalanges of the fingers.
XXXIII Reg. RADIO-CUBITAL, OR DEEP ANTE-BRACHIAL, 8 muscles.	101 Phalangetto-pollici-radial.	Posterior deep radial.	" " " phalanx of the thumb.
	102 Metacarpo-cubiti-radial.	1st oblique or anterior deep radial. (extensor ossis metacarpi poll.)	Extends the thumb and bends it towards the radius.
	103 Phalango-pollici-cubital.	2d Oblique, or anterior deep radial. (extensor primi internodii poll. manus.)	Extensor of the 1st phalanx of the thumb.
	104 Phalangetto-pollici-cubital.	1st Median deep ante-brachial. (extensor longus secundi int. poll. man.)	Extensor of the 2d phalanx of the thumb.
	105 Phalangetto-indici-cubital.	2d Median deep ante-brachial.	Extensor of the 2d phalanx of the index finger.
	106 Phalangetto-digiti-cubital.	Perforating, or deep seated palmar. (flex. digitorum profund. v. perforans.)	Common flexor of the third phalanges of the fingers.
	107 Epicondylo-radial.	Upper radial. (supinator brevis.)	Supinator, or rotator of the fore-arm outwards.
	108 Cubito-radial.	Pronator quadratus.	Pronator, or rotator of the fore-arm inwards.

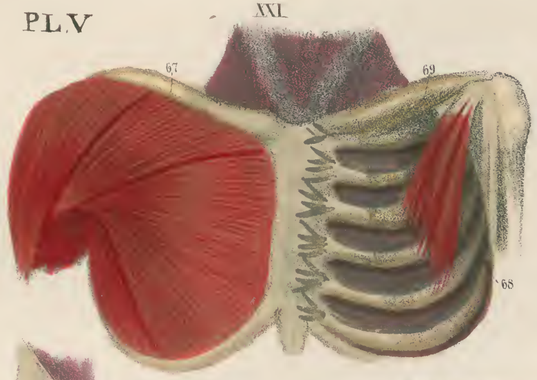
C. MUSCLES OF THE HAND, 19.

XXXIV Reg. METACARPO-CARPAL, OR SUPERFICIAL PALMAR. 7 muscles.	109 Supra-phalango-pollici-carpal.	1st thenar. (adductor pollicis manus.)	Bends the thumb towards the radius.
	110 Metacarpo-pollici-carpal.	2d " (opponens pollicis ")	Rotates the thumb towards the palm.
	111 Phalango-pollici-carpal.	3d " (flexor brevis " ")	Flexor of the first phalanx of the thumb.
	112 Aponeurosi-cutaneo-infra-carpal.	Cutaneous palmar muscle.	Puckers the integuments.
	113 *External* phalango-digituli-carpal.	1st Hypothenar. (abducter minimi digiti.)	Bends the little finger towards the ulna.
	114 *Internal* phalango-digituli-carpal.	2d Hypothenar. (flex. prop. min. dig.)	Flexor of the 1st phalanx of the little finger.
	115 Metacarpo-digituli-carpal.	3d Hypothenar. (opponens min. dig.)	Rotates the little finger towards the palm.
XXXV Reg. METACARPO-PHALANGIAN, OR DEEP PALMAR. 12 muscles.	116 4 Tendino-palmi-phalangian.	4 Metacarpal lumbricales.	Co-operative with the flexors of the fingers.
	117 1st Metacarpo-palmi-phalangian.	1st Palmar inter-osseous (pollicis.)	Abducts the thumb, or inclines it towards the ulna.
	118 2d " "	2d " " (indicis.)	Abducts the fore-finger, or bends it towards the ulna.
	119 3d " "	3d " " (annularis.)	Adducts, or bends the ring finger towards the radius.
	120 4th " "	4th " " (auricularis.)	Adducts or bends the little finger towards the radius.
	121 1st Metacarpo dorsi-phalangian.	1st Dorsal inter-osseous.	Adducts, or bends the index finger towards the radius.
	122 2d " "	2d " "	Adducts, or bends the middle finger towards the radius.
	123 3d " "	3d " "	Abducts or bends the middle finger towards the ulna.
	124 4th " "	4th " "	Abducts, or bends the ring finger towards the ulna.

Myography

PL.V

XXI



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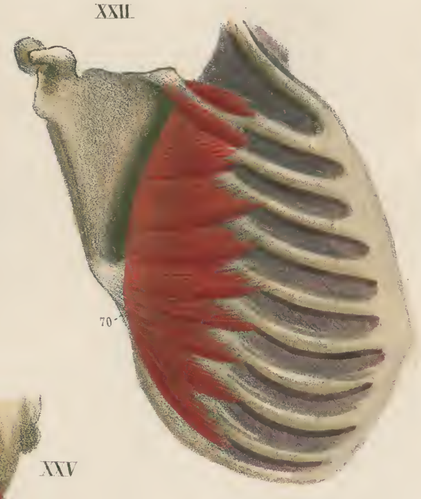

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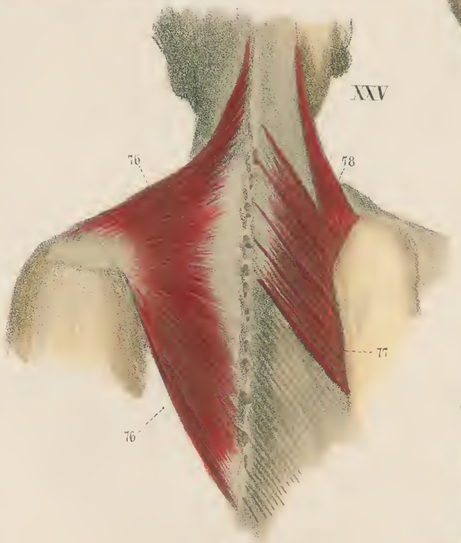

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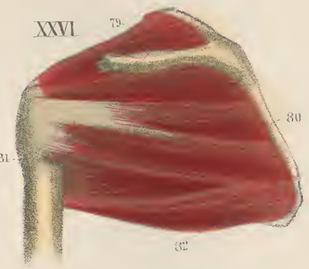

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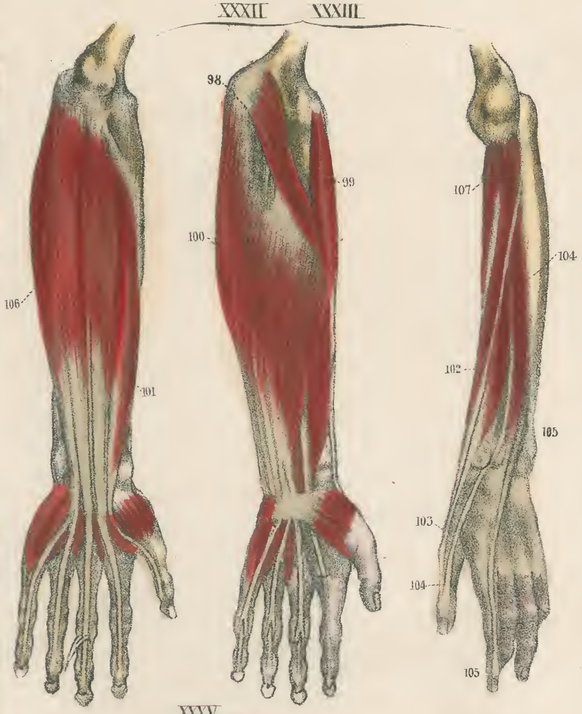

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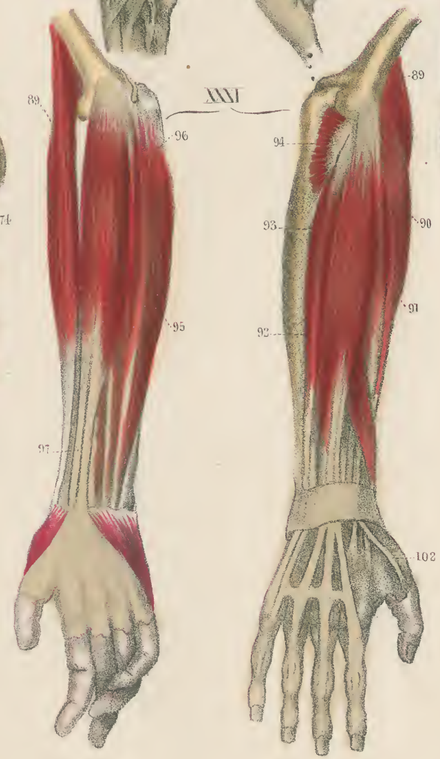

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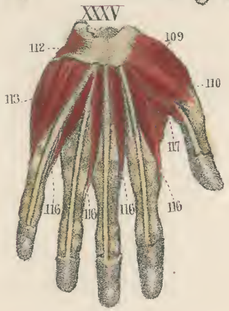

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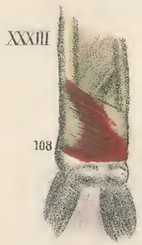

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III. SYNONYMIC TABLE OF THE MUSCLES

Second Division. Infra-diaphragmatic Muscles, 73.

MUSCLES OF THE TRUNK, (Lower part), 28.

A. MUSCLES OF THE ABDOMEN, 19.

NAMES OF REGIONS.		DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS. ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS. ACCORDING TO USES OR FUNCTIONS.
XXXVI Reg. TORSO-PELVIC, OR ANTERIOR ABDOMINAL. 5 muscles.	125	Costo-pelvic.	Great lateral abdominal oblique, (obliquus abdominis externus.	Flexor of the thorax on the pelvis, which it bends to its own side, and rotator of the trunk forwards, (m. of expiration).
	126	Lumbo-costi-pelvic.	Small lateral abdominal oblique, (obl. abd. internus).	*Idem;* but rotates the trunk backwards, (m. of expiration).
	127	Lumbo-abdomini-pelvic.	Transversus abdominis.	Tensor of the præ-lumbar aponeurosis, or lateral compressor of the viscera, (m. of expiration).
	128	Sterno-costi-pelvic.	Rectus (præ) abdominis.	Depresses the thorax and compresses the viscera, (m. of expiration).
	129	Infra-umbilico-pelvic.	Infra-umbilical, or pyramidalis abd.	Compresses, lowers and extends the linea alba, (m. of expiration).
XXXVII Reg. SUPERFICIAL-LUMBAR. 3 muscles.	130	Humero-costi-lumbar.	Great, or very wide muscle of the back, (latissimus dorsi).	Post-motor, adductar and depressor of the arm, which it rotates inwards.
	131	Trachelo-costi-lumbar.	Sacro-lumbalis, (or long muscle of the verteb.)*	Straightens the trunk and bends the thorax backwards towards the pelvis.
	132	Dorso-costi-lumbar.	Longissimus dorsi.*	Extends or straightens the trunk, or bends it backwards and to one side.
XXXVIII Reg. DEEP LUMBAR. 3 muscles.	133	Trochantinio-præ-lumbar.	Psoas magnus.	Flexes the thigh on the pelvis and rotates it inwards.
	134	Pubio-præ-lumbar.	Psoas parvus.	Bends down the loins forward on the pelvis
	135	Costo-ilii-lumbar.	Quadratus lumborum.	Depresses the last false rib, and bends the thorax to one side.
XXXIX Reg. COCCYGEAL, OR ANAL. 3 muscles.	136	Perinæo-coccygeal.	Orbicularis, or sphincter ani.	Constrictor of the anus.
	137	Pubio-coccygeal.	Square muscle of the anus, (levator. ani).	Raises the anus.
	138	Ischio-coccygeal.	Triangular " " (coccygeus).	Præ-motor of the coccyx.
XL Reg. PERINÆO-CAVERNOUS, OR GENITAL OF THE MALE. 3 muscles	139	Ischio-cavernous.	Oblique infra-pubic, (erector-penis).	Erector of the penis.
	140	Urethro-cavernous.	Horizontal infra-pubic, (accelerator urinæ).	Accelerator of the urine and semen.
	141	Ischio-perinæi-post-cavernous.	Transverse " " (transversus perinæi).	Constrictor of the urethra.
XL Reg. PERINÆO-CLITORIDEAL, OR GENITAL OF THE FEMALE. 2 muscles.	142	Ischio-clitorideal.	Oblique infra-clitorideal, (erector clit.)	Erector of the clitoris.
	143	Perinæo-clitorideal.	Orbicularis, (constrictor) vaginæ	Constrictor of the vagina.

B. MUSCLES OF THE PELVIS, 9.

XLI Reg. POSTERIOR-ILIAC, OR GLUTEAL 3 muscles.	144	Sacro-femori-iliac.	Glutæus maximus.	Extensor or post-motor of the thigh, which it rotates outwards.
	145	Great trochanterio-iliac.	" medius.	Abductor, and slightly a rotator of the thigh outwards.
	146	Small " "	" minimus.	*Idem.*
XLII Reg. ANTERIOR-ILIAC. 1 muscle.	147	Trochantinio-iliac.	Iliacus internus.	Flexes the thigh on the pelvis.
XLIII Reg. PELVI-TROCHANTERIAL. 5 muscles.	148	*Internal* infra-pubio-trocante rial.	Obturator internus.	Rotator of the thigh outwards.
	149	*External* "	" externus.	*Idem.*
	150	Ilio-sacro-trochanterial.	Pelvic pyramidal, (pyriformis).	*Idem.*
	151	Ischio-trochanterial.	Gemellus, (superior and inferior).	*Idem.*
	152	Ischio-infra-trochanterial.	Quadratus femoris.	*Idem.*

MUSCLES OF THE PELVIC OR ABDOMINAL LIMBS, 47.

A. MUSCLES OF THE THIGH, 12.

XLIV Reg. FEMORO-ROTULAR, OR ANTERIOR FEMORAL. 2 muscles.	153	Ilio-rotular.	Anterior straight muscle, (rectus femoris).	Extensor of the leg and flexor of the thigh.
	154	Tri-femoro-tibii-rotular.	Triceps extensor femoris.	Extensor of the leg.
XLV Reg. FEMORO-ISCHIATIC, OR POSTERIOR FEMORAL. 3 muscles.	155	Præ-tibio-ischiatic.	Demi-tendinous, (semi-tendinosus).	Post-motors and rotators of the thigh inwards, and flexors of the leg.
	156	Post tibio-ischiatic.	Demi-aponeurotic, (semi-membranosus).	
	157	Femoro-peronei-ischiatic.	Diceps (*Biceps*) femoris	Post-motor of the thigh, flexor and rotator of the leg outwards.

*Multifidus, or having multiplied and separate bundles.

CONTINUATION OF THE MUSCLES OF THE PELVIC LIMBS.

CONTINUATION OF THE MUSCLES OF THE THIGH.

NAMES OF REGIONS.		DENOMINATIONS ACCORDING TO ATTACHMENT.	DENOMINATIONS. ACCORDING TO FIGURE OR SITUATION.	DENOMINATIONS. ACCORDING TO USES OR FUNCTIONS.
LXVI Reg. FEMORO-PUBAL OR INTERNAL FEMORAL. 6 muscles.	158	Ilio-tibial, extra pubal.	Long oblique mus. of the thigh, (sartorius).	Flexor of the leg and thigh on the pelvis, rotates the thigh and powerfully adducts the leg.
	159	Infra-trochantinio-pubal.	Small superficial " " (pectineus).	Adductor, flexor and rotator inwards of the thigh.
	160	Præ-tibio-pubal.	Internal straight mus. of the thigh, (gracilis).	Flexes and adducts the leg.
	161	Femoro-spini-pubal.	Middle deep femoral oblique, (adductor primus vel longus).	Adductor of the thigh.
	162	Femoro-infra-pubal.	Small deep femoral oblique, (addt. secundus vel brevis).	*Idem.*
	163	Condyli-ischio-pubal.	Great deep femoral oblique, (addt. tertius vel minimus).	*Idem.*
LXVII Reg. EXTERNAL FEMORAL, 1 muscle.	164	Ilio-aponeurosi-femoral.	External femoral (tensor vaginæ femoris).	Abductor and tensor of the aponeurosis called fascia lata.

B. MUSCLES OF THE LEG, 13.

LXVIII Reg. SUPERFICIAL TIBIO-PERONEAL, OR TIBIAL. 4 muscles.	165	Supra-tarso-tibial.	Great anterior tibial, (anticus).	Flexes and bends the foot inwards.
	166	Supra-phalangetto-digiti-peroneal.	Middle " " (extens. long. com. dig. pedis).	Common extensor of the toes, and flexor of the foot.
	167	Infra-tarso-peroneal.	Long lateral peroneus, (longus).	Extends the foot and elevates its outer edge.
	168	Bi-femoro-calcanial, post-tibial.	Gastrocnemii, (gemini, gemelli).	Extensor of the foot, and flexor of the leg.
XLIX Reg. MIDDLE TIBIO-PERONEAL, OR TIBIAL. 3 muscles.	169	Post-femoro tibial.	Popliteus, or posterior oblique, mus. of the leg.	Flexes the leg and rotates it inwards.
	170	Calcaneo-tibial.	Solearis, (soleus).	Extensor of the foot.
	171	Little-femoro-calcanial, post-tibial.	Small tibial, (plantaris).	Extensor of the foot, and flexor of the leg.
L Reg. DEEP TIBIO-PERONEAL, OR TIBIAL. 6 muscles.	172	Supra-phalangetto, pollici-peroneal.	Small anterior tibial, (extensor prorius pollicis pedis).	Extends the great toe, and flexes the foot.
	173	Great supra-metatarso-peroneal.	Short lateral peroneun, (brevis).	Extends the foot and raises its outer edge.
	174	Small supra-metatarso-peroneal.	Small anterior peroneus, (tertius).	Flexor of the foot, which it inclines outwards.
	175	Peronei-infra-tarso-tibial.	Middle posterior tibial, (tibialis-posticus).	Extends the foot, adducts it, and raises its inner side.
	176	Infra-phalangetto-pollici-peroneal.	Posterior peroneus.	Flexor of the great toe.
	177	Infra-phalangetto-digiti-tibial.	Posterior tibial or perforating mus. of the foot, (flexor. com. long. digit. pedis).	Common flexor of the toes and extensor of the foot.

C. MUSCLES OF THE FOOT, 20.

LI Reg. METATARSO-TARSAL, OR DORSAL OF THE FOOT. 1 muscle.	178	Supra-phalangetto-digiti-tarsal	Dorsal pedal, (ext. digit. brevis).	Common extensor of the toes.
LII Reg. METATARSI-PHALANGO-PHALANGINIAN, OR SUPERFICIAL PLANTAR. 5 muscles.	179	Calcaneo-pollici-infra-phalangian.	Internal metatarsal of the great toe, (addt. pollicis pedis).	Adductor and flexor of the great toe.
	180	Tarso-pollici-infra-phalangian.	Plantar metatarsal of the great toe, (flexor brevis pollicis).	Flexor of the great toe.
	181	Calcaneo-digiti-infra-phalangian.	Perforatus, sublimis, (flex. brev. dig. ped).	Common flexor of the toes.
	182	Metatarso-digituli-infra-phalangian.	Plantar metatarsal of the little toe, (flexor brevis minimi digiti pedis).	Flexor of the little toe.
	183	Calcaneo-digituli-infra-phalangian.	External metatarsal, (abductor min. dig. pedis).	Abductor of the little toe.
LIII Reg. METARSI-PHALANGO-PHALANGETTIAN. OR DEEP PLANTAR. 14 muscles.	184	Calcaneo-digiti-infra-phalangettian.	2d portion of the flex. com. long. dig. ped. (accersorius, massa carnea Jacobi Sylvii).	Rectifies the oblique action of the long flex communis of the toes.
	185	4 Tendino-planti-infra-phalangian.	4th metatarsal lumbricales.	Bend the phalanges upon the metatarsus.
	186	Metatarso-pollici-infra-phalangian.	Transversus plantaris, (pedis).	Abducts the great toe.
	187	Metatarso-planti-phalangian.	1st plantar interosseus.	*Idem.*
	188	2d *Idem.*	2d *Idem.*	Adductor of the third toe.
	189	3d *Idem.*	3d *Idem.*	" " 4th toe.
	190	4th *Idem.*	4th *Idem.*	" " 5th toe.
	191	1st metatarso-supra-planti-phalangian	1st Dorsal interosseous.	Abducts the 2d toe.
	192	2d *Idem.*	2d *Idem.*	Abducts the 2d toe.
	193	3d *Idem.*	3d *Idem.*	" " 3d toe.
	194	4th *Idem.*	4th *Idem.*	" " 4th toe.

Myography.

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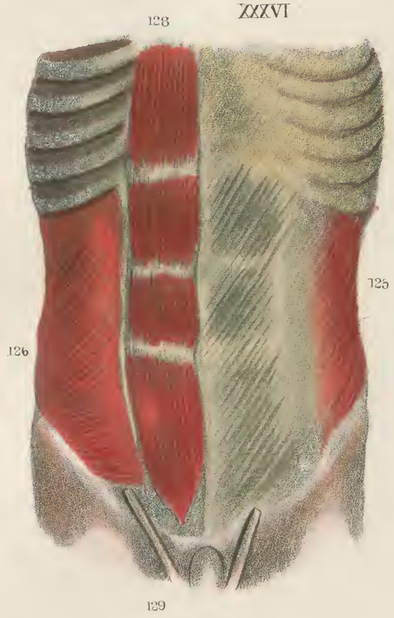

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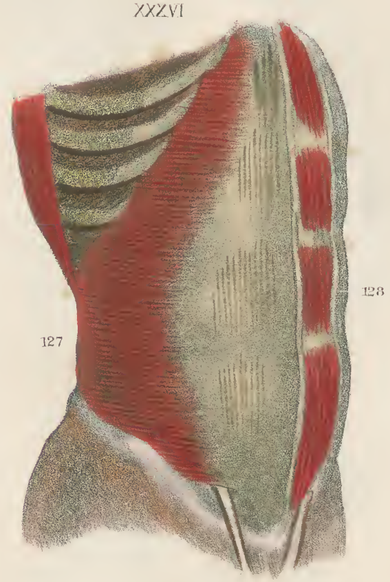

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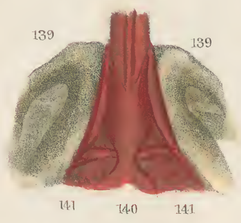

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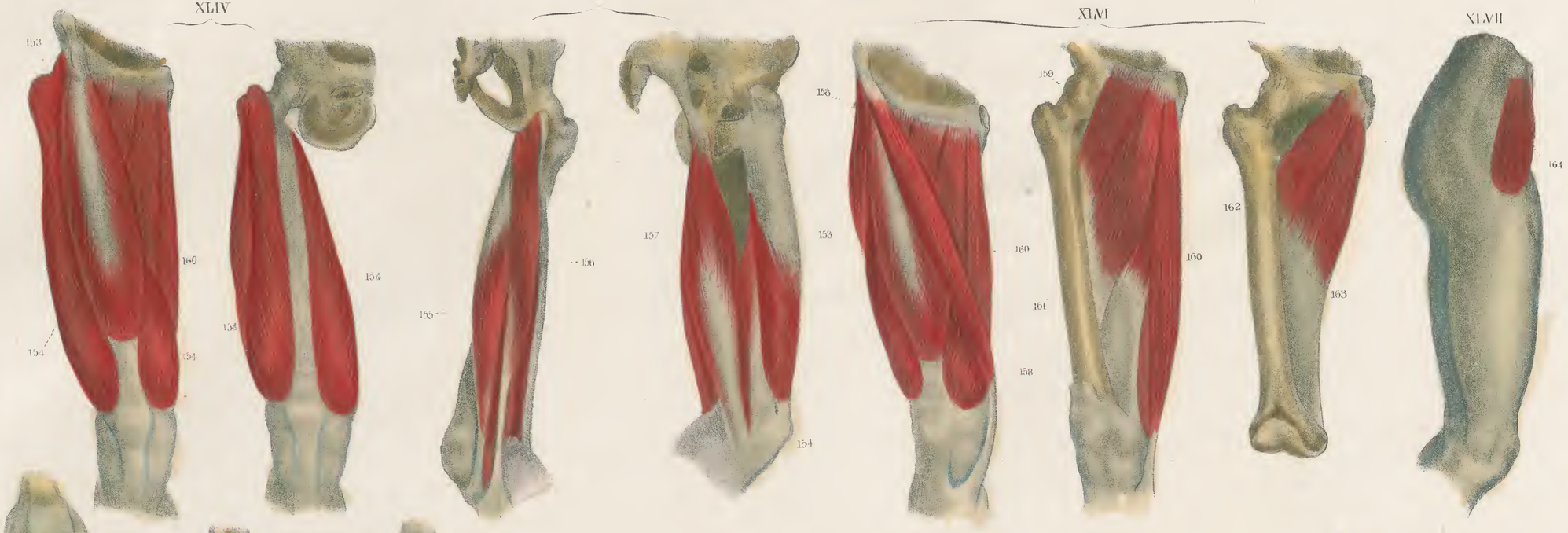

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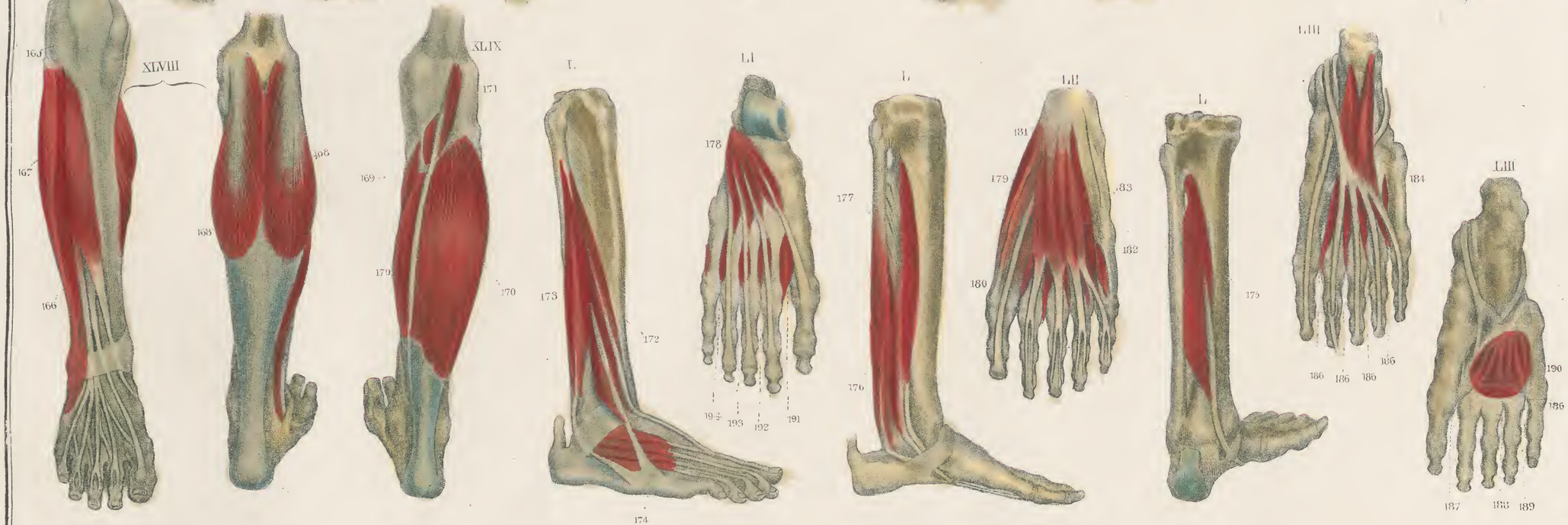

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AESTHESIOGRAPHY.

The apparatuses of the senses, or those called the sensorial, are destined to receive the impressions produced by external objects, and to transmit them, by means of the conducting nerves appropriated for these functions, to the brain. The external senses have been admitted to be five in number, which are *Sight*, *Hearing*, *Smelling*, *Taste*, and the *Touch*.

I. Visual, or Intra-Orbitary Apparatus, *(a partial sense.)* The Organ of Sight.

This apparatus consists of the globe of the eyes, the visual or optic nerve, of the motory and sensitive nerves, of the muscles, of the viæ lachrymaliæ, and of the eyelids.

- **A The Globe or Ball of the Eye,** located in the orbit, consists of:
  - a The external membrane, the Sclerotic coat, white, fibrous, opaque, covered on its anterior part by the *conjunctiva. a.* — 1 *Posterior* aperture for the passage of the optic nerve; 2 *Anterior* aperture occupied by the transparent cornea.
  - b The transparent Cornea, being much more convex than the remainder of the globe.
  - c The Iris, a circular membrane, placed behind the cornea, perforated in its centre by an aperture, and of various colors, having converging striæ upon its anterior, and circular ones upon its posterior surface. — 3 Pupil, or *central aperture of the Iris*, enlarging or contracting, to allow to the transmission of a greater or less number of luminous rays.(*)
  - d The Extra-Iridian, or *ciliary* circle, (ligament,) a ring of soft and spongy substance, which unites the iris to the choroid and sclerotic tunics.
  - e The Choroid coat, or *uvea*, a brownish black membrane, lining the inner surface of the sclerotica, which secretes a blackish fluid (pigmentum nigrum,) intended to absorb the rays of light, which passes behind the iris as far as the crystalline lens, at which it forms the *post-iridian* circle, or *ciliary processes. b.*
  - f The Chrystalline Lens, a lenticular, transparent body, consisting of concrete vitreous humor, enclosed in a membrane called the crystalline (capsular, or capsule of the lens,) and placed behind the aperture of the pupil. It is the optic centre.
  - g The vitreous body, or *humor*, a transparent, albuminous fluid, occupying all the space between the lens and the retina, and like the crystalline lens, serving as a medium for the passage of the rays of light.
  - h The Aqueous humor, occupying the space comprised between the crystalline lens and transparent cornea, which space is by the iris divided into two *chambers*, the anterior and the posterior.
  - i The Retina, a soft, pulpo-nervous membrane, occupying the fundus of the globe, and appearing to be an expansion of the optic nerve. This membrane receives luminous impressions, and transmits them to the brain.
- **B The Cerebro-ocular Nerve,** or the *Visual*, (optic, or 2d pair,) very voluminous, originating at the tubercula quadrigemina decussating with its fellow before it enters the orbit by the post-orbitary, or optic hole. This nerve conveys the impression of vision to the brain.
- **C Nerves of Motion and Sensibility,** coming from the 3d, 4th, 5th, and 6th pairs of cerebral nerves, (*vide Neurography,*) and distributing themselves upon the proper muscles of the eye and to the globe.
- **D The Muscles,** six in number, viz., the 4 straight and the 2 oblique, described in the Myographical Table, at the figures 9, 10, 11, 12, 13, 14.
- **E The Viæ Lachrymalia,** consisting of — 4 The *Lachrymal Gland.* 5 The *Lachrymal Orifices*, (puncta lachrymalia.) 6 The *Lachrymal Ducts.*
- **F The Eyelids,** which consist of — 7 The *palpebral cartilages*, (tarsi,) the upper is moved by the sphenoido-supra-palpebral muscle. (Myog. fig. 8.) 8 The *Orbicularis palpebrarum* muscle, (or maxillo-cutanei palpebral, Myog. 7.) 9 The *Cilia*, or eye-lashes, which exist upon their edges. 10 The *Intra-palpebral*, (or Meibomian) glands, which line their inner surface.

II. Auditory, or Intra-labyrinthic Apparatus, *(a partial sense.)* Organ of Hearing.

This apparatus consists of a series of cavities which are traversed by the sonorous rays on their way to reach the cerebro-intra-temporal (auditory) nerve.

This series of cavities, is divided into the *extra-tympanic*, and *intra-tympanic ducts*, and into the *labyrinth*.

- **G The Extra-Tympanic Duct or Canal,** (*meatus auditorius externus,*) at its extremity contains the auricle, and the remainder constitutes the passage which stops at the membrana tympani.
  - k The Auricle, or outer ear, is a cartilaginous shallow surface, having on it several folds, which are on the circumference the *helix*, more inwardly the *anthelix*, in front of the auditory hole the *tragus*, posteriorly the *antitragus*, and the *lobe* below. The central cavity is the Concha. *c.* — *Muscles.* 11 *Præ-conchineal, upper,* (helicis major.) 12 ——— *middle,* (helicis minor.) 13 ——— *lower,* (tragicus.) 14 *Infra-conchineal,* (anti-tragicus.) 15 *Post-conchineal,* (posterior auris.)
  - l The extra-auricular, or *conchineal* surface, is supplied with very small muscles, and the auricle is attached by ligaments to the bones of the cranium. — *Ligaments.* 16 *Supra-temporo-auricular.* 17 *Supra-zygomatico-auricular.* 18 *Mastoido-auricular.*
  - m The Meatus auditorius externus, which describes many curves in its course, and ends at the septum tympani. — 19 *Cryptæ* or *glandulæ ceruminosæ*, which line the interior of the duct. 20 *Septum of the tympanum*, (membrana tympani.)
- **H The Intra-Tympanic Canal,** (*meatus auditorius internus,*) composed of the cavity of the tympanum, and of the tympano-pharyngeal tube.
  - n The Cavity of the Tympanum, containing the ossicles and muscles of hearing. — *Ossicles.* 21 The *Malleus*, adhering to the septum tympani. 22 The *Incus*, articulated with the malleus. 23 The *Stapes*, articulated with the incus, and lying upon the tympano-vestibular hole. The *os orbiculare* seems to be mearly a bony nucleus, which is soldered to the stapes. — *Muscles.* 24 *Petro-malleal*, (internus mallei) adducts the malleus, (*tensor tympani.*) 25 *Spheno-malleal*, (laxator tympani,) abducts and moves the malleus forward, and relaxes the tympanum. 26 *Temporo-stapedial*, (posterior of the stapes,) (stapedius,) lowers the posterior and raises the anterior part of the stapes.
  - It communicates posteriorly with — 27 The *Mastoid cells.*
  - On its inner part with the cochlea, by — 28 The *tympano-cochlean hole*, (fenestra rotunda, ovalis.)
  - And with the vestibule, by — 29 The *tympano-vestibular hole*, (fenestra rotunda, ovalis.)
  - On the inner part with the Pharynx, by — 30 The *tympano-Pharyngeal canal.* (Eustachian tube.)
  - Its outer part is formed by the membrana tympani, (20) above described.
- **I The Labyrinth,** (*or internal ear,*) situated in the petrous portion of the temporal bone, within and behind the two other divisions; it consists of a bony tube lined by a closed membrane containing a serous looking fluid, which communicates immediately with the pulpy expansions of the nerve of the 8th pair.(**)
  - o The Bony Canals, comprising the semi-circular canals, and the cochlea.
    - p The *Semicircular canals.* — 31 *Upper vertical.* 32 *Lower vertical.* 33 *The horizontal.*
    - q The *Cochlea*, or spiral tube, divided into two portions by a septum, called *lamina spiralis*, forming tubes half bony and half membranous, called *scalæ.* — 34 *The tympanic-cochlean scala*, (scala tympani) a division exterior to the axis of the cochlea, which communicates with the tympanum by the foramen rotundum. (28.) 35 *Cochlean vestibular scala*, (or scala vestibuli,) the inner division, which communicates with the vestibulum by the foramen ovale. — All end in the central space called the vestibule.
  - r The Cerebro-intra-temporal, or *labyrinthic* nerve, (8th pair,** or auditory,) penetrates into the petrous portion of the temporal bone by the *tympano-intra-cranial hole*, (meatus auditorius internus;) enters the columella (modiolus) of the cochlea by a great many holes, is distributed by ramifying within the cochlea, the semi-circular canals, and vestibulum, and ends in pulpy matter on the intra-labyrinthic membrane, whence it collects the sonorous aerial undulations.

III. Olfactory or Intra-nasal Apparatus, *(a partial sense.)*

The Organ of Smelling.

This apparatus consists of the outer walls, of the nasal fossæ, of the secondary cavities, and of the expansions of the olfactory nerve, upon the pituitary membrane.

- **K The Outer Walls,** (the nose,) are formed of — 36 The *proper bones of the nose*, superiorly (ossa nasi.) *G. in the Osteog.* 37 The two *naso-parietal fibro-cartilages*, which constitute the wings, (alæ.) 38 The two *naso-lobal fibro-cartilages*, forming inferiorly the edges of the nostrils. — These parts are covered by the muscles of the face, by cellular tissue, by sebaceous follicles, and the integuments.
- **L The Nasal Fossæ** are separated by a central septum, and consist of
  - At the central part — 39 Of the *vertical plate of the Ethmoid bone.* *v. Osteog.* E. 38. 40 Of the Vomer, or *central nasal bone.* 41 Of the *central nasal cartilages*, (the lateral.)
  - At the upper wall — 42 Of the *cribriform plate of the Ethmoid.* 43 Of the *upper and middle turbinated bones*, (*cornets*, Fr.) being parts of the same bone. — *v. Osteog.* 36. 39, 40.
  - At the lower wall — 44 Of the horizontal portion of the *upper Maxillary and palatine bones*, (the floor of the nasal fossæ.) *Osteog.* 1, L.
  - At the outer wall — 45 Of the ascending part, (nasal process,) of the *upper maxillary bone*, and of the *palatine bones. Osteog.* 1, 68 L. i. 46 Of the pterygoid process of the sphenoid bone. *Osteog.* F. 54. 47 Of the *Lachrymal bones, or ossa unguis. Osteog.* H. 48 Of the *great lower turbinated*, or *parieto-nasal bone.*
- **M The Secondary Cavities,** consisting of — 49 The *Maxillary sinuses* 50 The *Frontal* " 51 The *Ethmoïdal* " 52 The *Sphenoïdal* " — which present cells, or cavernous excavations of sufficient depth and sufficiently numerous, whose office is to collect odorous particles *en masse*, and so to retain them for a longer time in contact with the expansions of the infra-ethmoidal nerves and prolong the perception of smell.
- **N The Expansions** of the *Olfactory*, or *cerebro-supra Ethmoidal* nerve; (1st pair.) — These expansions are the termination of the infra-ethmoidal twigs, which pass into a soft pulp within the intra-nasal mucous (pituitary of Schneiderian) membrane, in the same manner as the other sensorial nerves, (and particularly those of hearing and vision.) It is upon the upper part of the forsæ nasalia that these expansions are chiefly distributed, and that olfaction is effected, although the pituitary membrane also lines the secondary cavities and the other parts of the fossæ. The nerves of the 5th pair, which are distributed upon this membrane, are the nerves of sensation and olfactory excitement.

IV. Gustatory, or Intra-buccal Apparatus, *(a partial sense.)*

The Organ of Taste.

This apparatus is composed of the tongue, of the velum of the palate, and of the gustatory or pterygo-lingual nerve.

- **O The Tongue,** an oval oblong organ, occupying the lower part of the mouth, and fastened by its posterior extremity to the os Hyoides; it consists of — Short and numerous muscular fibres, some of which are longitudinal, others transverse, vertical, or oblique, and converging more or less towards the meridian line; and also of a cartilaginiform lamina, or septum, ending by a yellow ligament. — All the fleshy bundles together form the glossal muscle, and serve to vary extremely the motions of the tongue, for the modification of the sounds of the voice, for the articulation of words, and to enable it to mould itself upon the bolus of food in the act of mastication.
- **P The Velum of The Palate.** — Forms the posterior vault of the mouth, and end of the floor of the nasal fossæ behind. — It also takes cognizance of flavors, but less acutely, and in a less extent the tip and edges of the tongue.
- **Q The Gustatory** nerve is the second twig of the 3d branch of the 5th pair, or cerebro-supra-sphenoidal. — This nerve passes into the tongue at its lower part, where it ramifies into a great many filaments, which terminate chiefly upon its edges, its point, and upper part. A few twigs are given off to the tonsils and pharynx. — The extremities of the lingual nerve and the capillary vessels form the *papillæ* of the tongue, some of which are conoid, others fungiform, others lenticular or filiform, which are the seats of the perception of flavors. These parts are covered by the mucous membrane, which forms below the *frenum*, by which the motions of the tongue are limited.

Note. *α.* The Cerebro-Pharyngo-Glossal nerve, (9th pair,) seems to be intended only for determining the motions of deglutition; and *β.* the Cerebro-Hyoido-Glossal nerve, (11th pair,) regulates the movements of the tongue exclusively, particularly in articulation and in mastication.

V. The Tactile or Cutaneous Apparatus, *(a general sense,)* (cutis, skin, or integument.)

The Organ of Touch and Feeling, and the Seat of several Manifestations of the Passions.

This apparatus constitutes the external envelope of the entire body; the *skin* is a sensible, perspirable, and an absorbing surface; its thickness is unequal, (from a quarter of a line to a line and a half,) greater on the posterior parts of the trunk and on the external part of the limbs, delicate over the eyelids, nipples, genital organs, and on all the flexures. It consists of two distinct folia.

- **R The Derma,** a deep folium composed of 3 layers.
  - s The Chorion, or deep layer, (derma.) — A white, fibro-cellular, dense structure, through which pass the hairs, vessels and nerve going to the surface.
  - t The Middle Papillary layer. — Formed by the expansion of nerves. And by the vessels divided into — sanguineous for the gen'l. cir'n. — the seat of erectility and of cutaneous corrugation. — exhalant & absorb't. for secret'n.
  - u The Mucous Reticular layer, (retemucosum;) 3 laminæ, (superficial.) — 53 *Deep white layer.* 54 *Colored layer.* 55 *Albid, horny, or superficial layer.* — The normal and accidental coloring principle resides in this layer, and in it are manifested redness or pallor, particularly in that part which covers the muscles of expression of the face.
- **S The Epidermis,** the upper folium, considered in a three-fold respect.
  - v The Epidermis, properly so called, is an exudation from the superficial cuticular or dermatoid layer; it is a delicate membrane, transparent, horny looking, insensible, and capable of being reproduced in places where it had previously been destroyed.
  - x The Nails: like the horns of animals, also arise from the superficial dermatoid layer, which vegetates.
  - y The Hairs: are formed by a sheath of the epidermis, which contains canals filled with coloring matter of a black, blonde, or other hue. The hair, eyelashes, and eyebrows, grow during the fœtal state; the hairs upon the genital parts, and in the axillæ, appear about the age of puberty in either sex; and the beard grows upon the chin and cheeks of the male only.

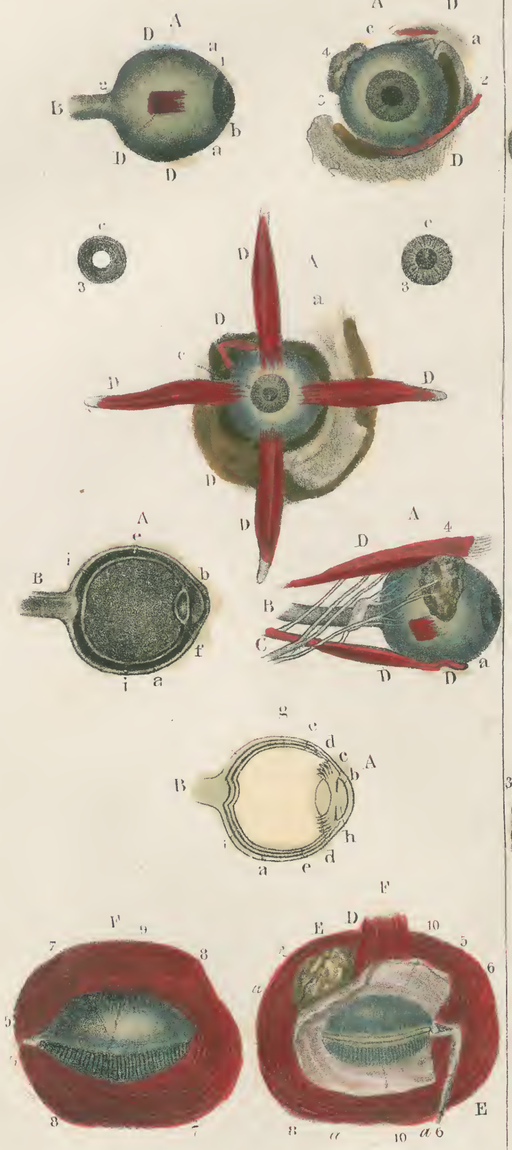
(*) Before the 7th month the pupil is closed by the membrana pupillaris, or intra-iridian; after this period the membrane is ruptured.

(**) The 7th pair, according to Bell, Cloquet, and other writers.—Tr.

Aesthesiography.

PLATE VIII

I



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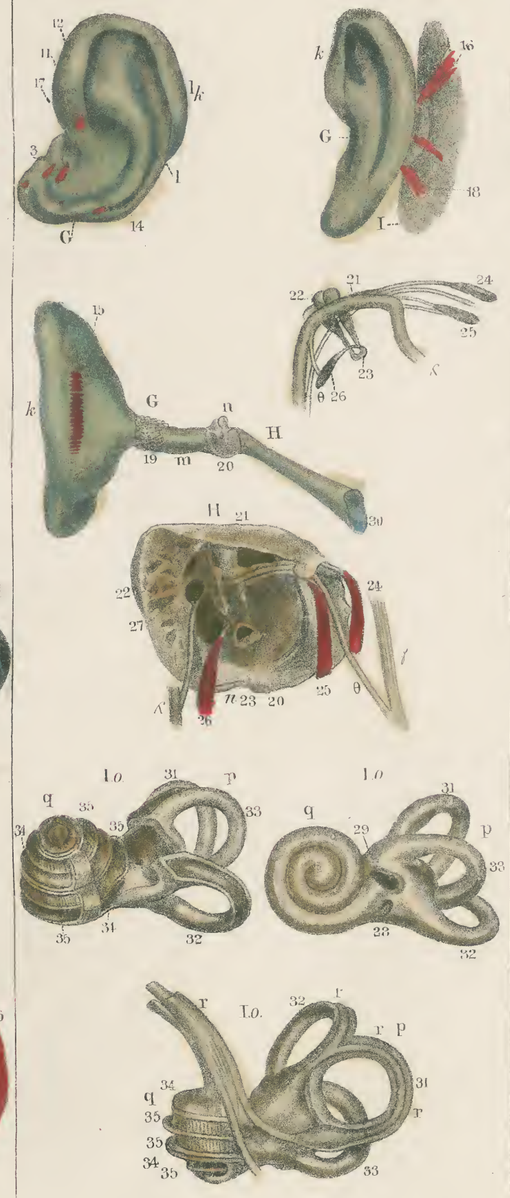

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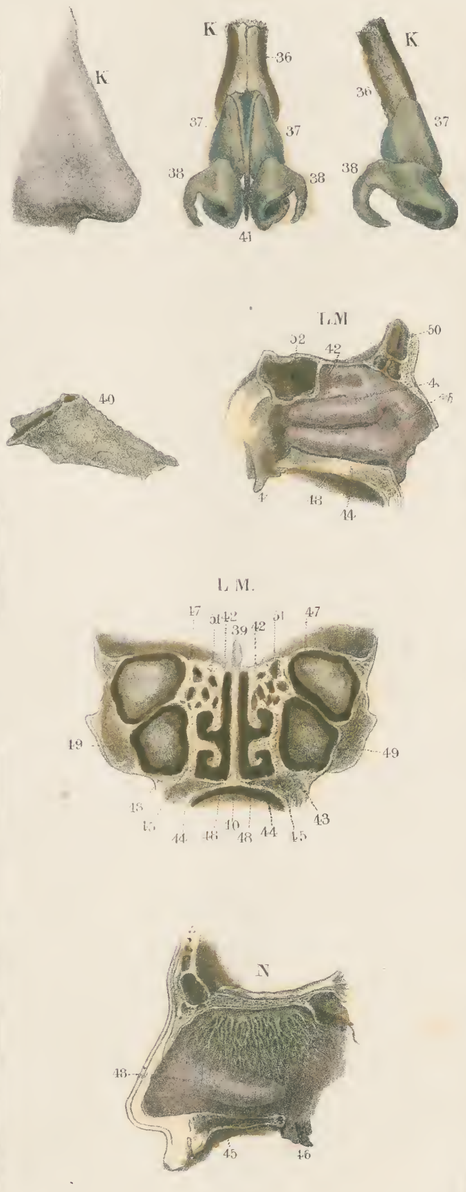

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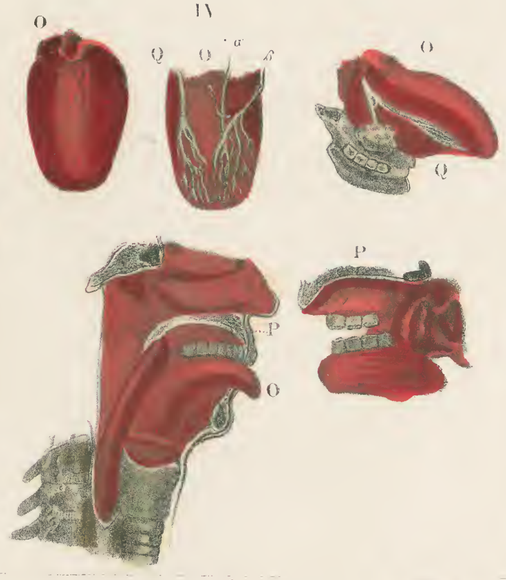

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SPLANCHNOGRAPHY.

THE viscera are the organs essential to life; they are contained within the bony frame in the three great cavities of the body, the cranium, the thorax and the abdomen. Their uses are, 1st, to preserve the relations of the individual with external objects, by means of the intra-cranio-vertebral apparatus; 2d, to communicate wants of sensations by means of the vocal organs; to preserve life by the exercise of respiration and circulation, effected by the intra-thoracic organs, and 3dly, for alimentation and the exoneration of its product, and for the formation and reproduction of the animal species by the action of the intra-abdominal and pelvic organs.

The organs which are contained in the cranio-vertebral cavity and constitute the cerebro-spinal apparatus, are classed under the head of the nervous system, of which they are the centre of action. (Vide Neurography.)

Organs which are contained in the Thorax or Supra-diaphragmatic Cavity.

I. The Vocal Apparatus.

Consisting of the Larynx, Trachea, Pharynx, Mouth and Fossæ Nasalia.

A The LARYNX. The upper or guttural part of the Trachea, which is attached to the os hyoides.

Cartilages.

1 The THYROID, forming the anterior part. } The support of the other portions of the larynx.

2 The CRICOID.
- 3 The largest portion occupying the posterior part. } The posterior support of the muscles of the larynx, and the anterior moveable piece which can be raised towards the thyroid cartilage.
- 4 The narrow portion which forms a ring in front of and below the thyroid cartilage.

5 The two ARYTENOID on the posterior part, directly above the wide portion of the cricoid cartilage. } Moveable pieces which act in the intonations of the voice.

6 The EPPIGLOTTIS, a fibro-cartilage on the anterior upper part, below the base of the tongue. } It closes the glottis during deglutition.

Ligaments.

7 The *hyoido-thyroidal* membrane.
8 The two *lateri-hyoido-thyroidal* ligaments (thyro-hyoid).
9 The *crico-thyroidal* membrane.
10 The two *anterior-lateri-crico-thyroidal* ligaments.
11 The two *posterior-lateri-crico-thyroidal* ligaments.
12 The two *crico-arytenoidal* ligaments.
13 The two *thyro-arytenoidal* ligaments. (The chordæ vocales.)

Muscles.

14 *Thyro-cricoidal* (crico-thyroidei.)	Anterior laryngeal.	Elevates the cricoid cartilage.
15 *Thyro-arytenoidal.*	Internal transverse laryngeal.	Moves the arytenoid cartilage forward and dilates the glottis.
16 *Lateri-crico-arytenoidal*	Internal oblique laryngeal.	Depresses the arytenoid cartilages and moves them forwards.
17 *Post-crico-arytenoidal.*	Posterior oblique laryngeal.	Depresses the base of the arytenoid cartilages and abducts their summit.
18 *Inter-arytenoidal* (arytenoideus.)	Posterior transverse laryngeal.	Adducts the summit of the arytenoid cartilages, and consequently moves them backwards.

The TRACHEA, (wind-pipe,) a fibro-membranous canal, described under the respiratory apparatus. } The cartilaginous rings of the trachea either approximate or separate in an insensible manner, to render the voice acute or grave.

The PHARYNX is described under the digestive apparatus. } Its capacity is dilated or contracted according to the intensity of the sound.

The MOUTH is described under the same head. } It contracts or dilates in different directions by the action of the cheeks, lips, and tongue, for the articulation of vowels and consonants.

The FOSSÆ NASALIA are described under the apparatuses of the senses, (vide the table of Aesthesiography.) (They serve to produce nasal sounds.)

II. The Respiratory Apparatus.

This Apparatus is composed of the Trachea, Bronchi, Lungs, Diaphragm, and Costal Expiratory and Inspiratory Muscles.

B The TRACHEA, or laryngo-bronchial aerial canal. It is formed of fibro-cartilaginous rings, separated from each other by a fibrous membrane. The posterior, or œsophageal part is composed, for its entire length, of a fibro-cellular membrane.

c The BRONCHI, or right and left tracheo-pulmonary canals, are formed by the bifurcation of the trachea on a level with the second dorsal vertebra; they also consist of rings, and are divided indefinitely into rami and ramusculi, to constitute the *arbor-pulmonaria.*

d The LUNGS, (*Pulmones,*) are parenchymatous, soft, permeable organs filling the right and left cavities of the thorax, lined by a serous membrane called the *pleura*, and separated in the centre by the heart, and anteriorly and posteriorly by two layers of cellular tissue which have been called the *mediastina.* The lungs are formed of the mass of æriferous ramifications of which the bronchi and trachea represent the trunk, and with these æriferous ramifications the ultimate divisions of the cardiaco-pulmonary artery, which brings the venous blood from the heart, are every where in contact. By the action of the air upon the venous blood is created arterial blood, which, passing in the pulmo-cardiac veins or ducts, returns to the heart.

The mucous membrane which every where lines the interior of the trachea, the bronchi, and their ramifications, is the seat of necessity for respiration.

C The DIAPHRAGM, or SEPTUM MEDIUM, an aponeurotico-muscular, wide, flattened and almost circular organ, adhering to the last ribs, to the sternum and to the first lumbar vertebra; it forms a septum which separates the thorax from the abdomen, and divides man into an upper and lower half. It descends in inspiration and ascends in expiration, and approximates the inner surface of the ribs. It is perforated to give passage to the œsophagus, and to the arterial and venous trunks. } This muscle, when it contracts, causes the ribs to descend and, brings them together; and thus by acting in concert with the post sternal and abdominal muscles of expiration, it diminishes the cavity of the chest.

NOTE. All the muscles of inspiration dilate the thorax and elevate the ribs. (Vide Myography.)
The muscles of expiration contract the thorax, compress the lungs, and lower the ribs. (Vide the muscles of the costal and pelvic regions.)

III. The Circulating Apparatus.

Consisting of the Heart, of the Aorta, of the whole Arterial System, of the Venous System, and as an Appendix, the Lymphatic System.

D The HEART (*cor.*) is the central organ of the circulation of the blood. It is conoid, muscular; and has fleshy columns. It is contained within a membranous pouch called the *pericardium.* Its base is situated in the centre of the thorax, between the lungs and above the diaphragm. Its point is turned towards the left side and it is divided into two cavities, a right and a left one.

The right side, or that which contains black blood.

f RIGHT AURICLE, which receives the blood that comes from all the veins in the body.
- 19 The *orifices* of the thoraco-cardiac and abdomino-cardiac venous trunks, (the venæ cavæ, superior and inferior.)
- 20 Auriculo-venous *valves* (valvulæ Eustachii.)

g The RIGHT VENTRICLE which propels the blood into the cardiaco-pulmonary artery.
- 21 Right auriculo-ventricular *orifice.*
- 22 Right auriculo-ventricular *valves* (tricuspid.)
- 23 *Orifice* of the cardiaco-pulmonary artery.
- 24 The right ventriculo-arterial valves (the sigmoid or semilunar.)

The left side, or that which contains red blood.

h LEFT AURICLE, which receives the blood that comes from the lungs.
- 25 The orifices of the pulmo-cardiac veins (the pulmonary veins.)
- 26 Left auriculo-ventricular *orifice.*

i The LEFT VENTRICLE which projects the blood into the aortic trunk (or art^a. aorta.)
- 27 Left auriculo-ventricular *valves* (mitral.)
- 28 *Orifices* of the cardiaco-aortic (coronary) arteries.
- 29 Left ventriculo-arterial *valves* (the semilunar.)

The manner in which the circulation proceeds is this; the chyle which is taken up from the intra-intestinal surfaces by the chyliferous vessels, is conveyed into the abdomino-thoracic lymphatic duct, and then into the system of veins, and there mingling with the black blood, it reaches with it the right auricle of the heart, and then enters the right ventricle. The latter, by its muscular power, sends it into the cardiaco-pulmonary duct; when it reaches the lungs it acquires the properties of arterial blood; returns by the left auricle to the heart, enters the left ventricle and is thence projected into the aorta, whence it is distributed to every artery of the body. After having served the purposes of nutrition and for the functions of the capillary system, it returns by the veins, in the state of black blood to the heart again, and thus reaches the right auricle. (See the table of Angeiography for the details of the apparatus.)

(1) The genital apparatus of the male being a secretory apparatus, is described in the following table, the Diacrisiography.

Organs contained in the Abdomen or Infra-diaphragmatic Truncal Cavity.

IV. Digestive Apparatus.

A cylindrical canal which extends from the mouth to the anus, being five or six times longer than the body of the individual. In the part which forms the mouth and pharynx, the alvine canal is wide and funnel shaped; narrowed and straight to form the œsophagus, extremely dilated to form the stomach, immediately afterwards constricted and making a sphincter, (the pylorus,) and then folded upon itself many times to constitute the intestines. The latter are divided into—1st, the *duodenum,* where the canal is dilatable; 2d, into the *small intestines,* (ἔντερον) where it continues to be contracted; and 3dly, into the *large intestines,* (the *cœcum,* the *colon,* and the *rectum,*) when it bulges anew. The canal ends, lastly, by another constriction, (the sphincter ani.)

The canal is composed, for its entire length, of three tunics which are extensible and contractile, which form folds during digestion, and perform a vermicular movement in order to pass forward the bolus of food.

The gastric-mucous membrane is the seat of the sensations of appetite, hunger, thirst, and satiety.

E The MOUTH, (*os*) the upper anterior extremity of the digestive canal.

at the anterior part.
- 30 The LIPS (labia) composed of the labial muscles and the mucous membranes.
- 31 The GUMS (gingivæ) formed of mucoso cellular tissue.
- 32 The DENTAL ARCHES, offering in either jaw,
  - 33 Four incisor teeth. (incisores.)
  - 34 Two canine teeth. (cuspidati.)
  - 35 Four small molares. (bicuspidati.)
  - 36 Six large molares.

} Organs of prehension and mastication.

at the upper part.
- 37 The VAULT of the PALATE (fornix palati) composed of mucous cellular tissue.

at the lower part.
- 38 The TONGUE (lingua) of a nervoso muscular texture.
- 39 The DUCTS of the infra-maxillary and infra-lingual glands.

at the lateral parts.
- 40 The CHEEKS (genæ) composed of the lateri-facial muscles.
- 41 The infra-auriculo-maxillo-buccal, or PAROTID duct.

F The PHARYNX, or posterior fauces, a musculo-membranous cavity, surrounded by the muscles of deglutition.
- 42 The PILLARS of the VELUM PALATI (the staphyline muscles.)
- 43 The VELUM PALATI.
- 44 The PALATO-PHARYNGEAL GLANDULAR CRYPTÆ, (amygdalæ, or tonsils.)
- 45 The infra-tympano-pharyngeal ORIFICE (of the Eustachian tube.)
- 46 The EPPIGLOTTIS, which closses the aeriferous canal (trachea.)

} Organs of preparation, of insalivation, of the first trituration of the bolus of aliment and of deglutition,

G The ŒSOPHAGUS (gula) GULLET, or PHARYNGO-GASTRIC CANAL.—A contractile musculo-membranous tube, like the muscles of relation.

H The STOMACH, (ventriculus) (γαστερ.) A pyriform musculo-membranous bulging, furrowed with rugæ.
- 47 GASTRO-ŒSOPHAGEAL (the upper or cardiac) ORIFICE (cardia.)
- 48 GASTRO-INTESTINAL (the lower or pyloric) ORIFICE (pylorus.)

} The organ of preparation, of impregnation with the gastric juice, and of the second trituration of the bolus of aliment.

I The DUODENUM, or succenturiate (secondary) stomach, the first dilatable portion of the intestines furnished with many folds or valvulæ conniventes.
- 49 MOUTH of the *cystico-hepato-duodenal duct* (or d. com. choledochus.)
- 50 MOUTH of the *pancreatico-duodenal* (pancreatic) *duct.*

} The organ of preparation, and of impregnation with the bile for the solution of the bolus of aliment.

J The SMALL INESTINES, (ἔντερον.) The second intestinal portion (jejunum and Ileon) attached by the *mesentery,* or a fold of the peritoneum so called, to the vertebral column and the neighboring parts.
- 51 *Intra-intestinal-absorbent* MOUTHS.

} Organs of chymification.

K The LARGE INTESTINES.

i The *Cœcum.*
- 52 *Entero-ilio-cœcal* VALVE AND APPENDIX (vermiformis.)

k The *Colon* forming a circuit.
- 53 *Ascending* or right lumbar portion.
- 54 *Transverse* or infra-gastric-portion. (arch of the colon.)
- 55 *Descending* or left lumbar portion.
- 56 Sigmoid flexure (lower or illiac portion.)

l The *Rectum,* in the cavity of the pelvis.
- 57 The SPHINCTER of the *anus,* or its lower part.

} Organs of defæcation.

The APPENDAGES OF THE DIGESTIVE CANAL are the salivary glands, the pancreas, liver, gall bladder and urinary apparatus, described in the following table. (Vide Diacrisiography.)

V. Genital Apparatus of the Female.(1)

Consisting of the Ovaria, of the Utero-ovaric Tubes, of the Uterus, Vagina and Vaginal Orifice.

L The VAGINAL ORIFICE, (or vulva) situated under and in front of the pubic arch.
- 58 The CLITORIS, a small nervoso-spongy, erectile body situated at the upper part and concealed in the commissure of the labia.
- 59 The EXTRA-VAGINAL EDGES, (or *labia pudendi majora*) formed by the skin and covered with hairs.
- 60 INTRA-VAGINAL CRISTÆ (or *labia minora* vel *nymphæ,*) folds formed by the vagina behind the great labia.
- 61 The MEATUS URINARIUS is placed immediately below the clitoris. In virgin women the lower part of the vulva is usually closed by a valvuloid membrane called the *hymen,* which when torn, leaves the projections called carunculæ myrtiformes.

} The organ of venereal appetite in the female.

M The VAGINA or EXTRA-UTERINE canal, a reddish, extensible, membranous duct, from 5 to 7 inches long.
- 62 *Bands of longitudinal muscular fibres* placed superiorly and inferiorly.
- 63 *Transverse vaginal folds,* (or rugæ) wrinkles formed by the constituent mucous and muscular membranes.
- 64 *Mucous cryptæ.*

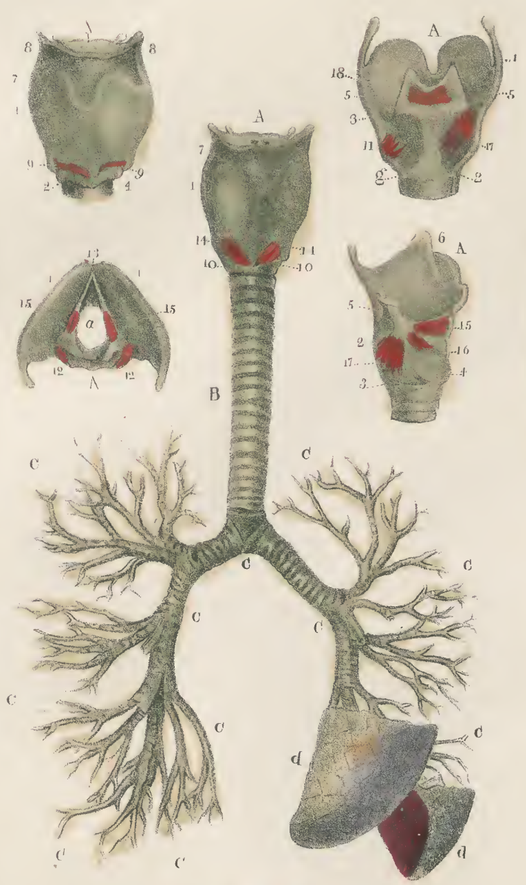
N The UTERUS, (matrix or womb,) a pyriform musculo-parenchymatous body, very dilatable during pregnancy; placed at the top of the vagina in the pelvic cavity.
- 65 The BODY OF THE UTERUS formed of a compact muscular tissue, susceptible of transformation during labor, and having in its centre a narrow aperture when in a state of vacuity.
- 66 The CERVIX UTERI (and os tincæ) or vaginal end, forming a rim in the vagina in which the uterine orifice ends.
- 67 Lateral ovarian orifices.
- 68 The *circa-utero-ovarian* (broad) ligaments, formed by folds of the peritoneum and destined to support the uterus and ovaria.
- 69 The *utero-præ-pubic* (round) ligaments, intended to support the uterus in front.

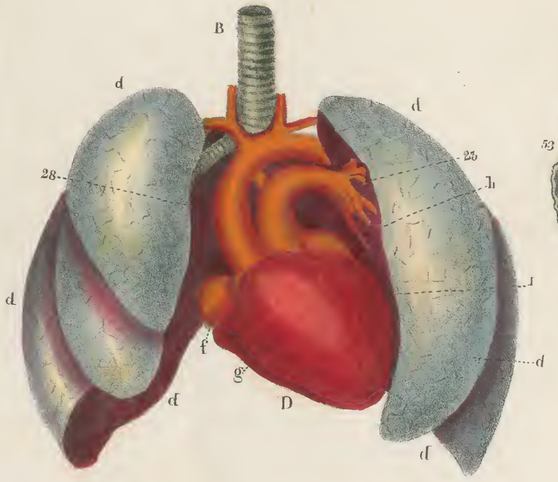
} The organs of the first germination of the embryo and of the nutrition of the fœtus during gestation.

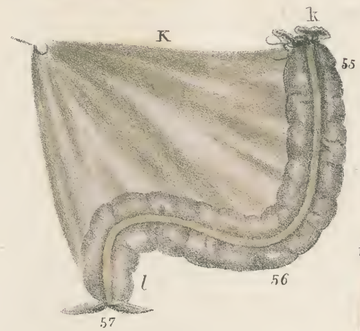
O The UTERO-OVARIAN, (uterine or fallopian) tubes. } Slender canals, which end by a funnel shaped, fringed expansion.
- 70 Continuous with the ovaria, and contractile during the act of conception.
- 71 Floating loose in the abdomen.

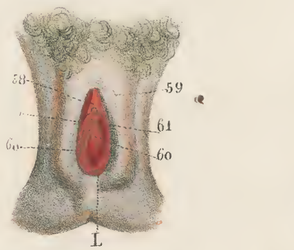
P The OVARIA, ovoid, vascular, and knobbed parenchymata, situated on either side of the uterus.
- 72 The BODY OF THE OVARIUM composed of vesicles filled with an albuminous fluid; } They appear to be destined to receive the semen or the *aura seminalis,* to effect the first germination of the embryo.
- 73 *Utero-ovarian* LIGAMENTS.

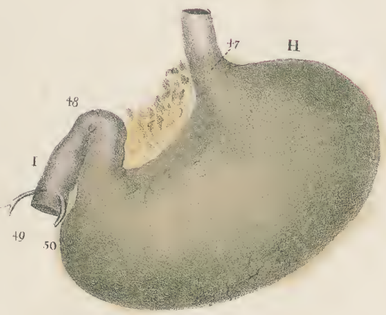
Splanchnography.

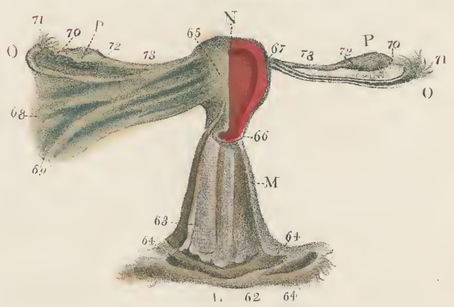












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The apparatuses of secretion consist of glands or cryptæ, destined to separate the various liquids met with in the animal body from the blood. The glands vary very much in size, and have all excretory ducts, intended to carry off the product of their secretion. Cryptæ are little hollow bodies, which secrete as the glands do, but possess no excretory canal. The exhalant membranes offer no traces either of glands or of cryptæ, but seem to act in the same way as sieves or filters.

Apparatuses whose excretory ducts open upon mucous membranes.

Orbito-nasal and Buccal Cavities.

I. *Intra-orbitary secretory apparatus.* (Lachrymal and palpebral.)

- **A** The INTRA-ORBITARY, or *lachrymal* gland, consisting of round and soft granulations, in which the excretory ducts originate which are destined to eliminate the tears. → 1 The LACHRYMO-POST-PALPEBRAL ORIFICES, (excretory ducts,) which pour the tears upon the inner surface of the upper eyelid, to lubricate the surface of the conjunctiva.
- 2 The PALPEBRO-INFRA-ORBITARY ORIFICES AND DUCTS, (puncta-lachrymalia and lachrymal ducts,) which absorb the tears at the inner angle of the eyelids. → 3 ORBITO-NASAL CANAL, (lachrymal sac and nasal duct combined,) opening between the outer wall of the nasal fossæ, and the great (or lower) turbinated bone. → This canal serves as an emunctory for the tears when secreted in too great abundance.
- a ANGULI-INTRA-OCULAR MUCOUS CRYPTÆ, (carunculæ lachrymalia) placed in front of the interstice of the lachrymal ducts.
- b INFRA-PALPEBRAL MUCOUS CRYPTÆ, (glands of Meibomius) round follicles arranged in vertical lines behind the palpebral fibro-cartilages. → Which secrete a mucus, to lubricate the inner surface of the eyelids.

II. *Intra-nasal secretory apparatus.*

- c INTRA-NASAL (pituitary) MUCOUS CRYPTÆ, follicles which line the membranes that clothe the nasal fossæ, the frontal, the sphenoidal and the maxillary sinuses, &c. → Which secrete the mucus of the nose.

III. *Salivary secretory apparatus.*

- **B** The SALIVARY INFRA-AURICULO-MAXILLARY GLAND, (the Parotid) consisting of granulated lobules, whence the excretory ramusculi arise. → 4 SALIVARY INFRA-AURICULO-MAXILLI-BUCCAL DUCT, (Parotid duct or duct of Steno,) opening on the inner surface of the cheek opposite the second molar tooth
- **C** The SALIVARY INFRA-MAXILLARY GLAND, granulated and lobulated like the preceding one. → 5 SALIVARY INFRA-MAXILLO-BUCCAL DUCT, (sub maxillary or duct of Wharton,) opening on the sides of the frenum of the tongue. → The saliva serves for the imbibition of the bolus of food, to facilitate its deglutition, and to prepare it for undergoing digestion.
- **D** The SALIVARY INFRA-LINGUAL (sub-lingual) GLAND, organized like the preceding ones. → 6 SALIVARY INFRA-LINGUAL DUCTS, which open on the sides of the frenum of the tongue.

Laryngeal, Tracheal and Bronchial Cavities.

IV. *Laryngo-trachei-bronchial secretory apparatus.*

- **E** The EPIGLOTTIC GLAND, an accumulation of agglomerated glandular grains, situated between the epiglottis and the os hyoides; → Which secretes an unctuous fluid, lubricating the epiglottish and keeping it supple and moveable for the performance of its functions.
- **F** The ARYTENOID GLANDS, small glandular bodies near the glottis, situted in folds of membrane along the arytenoid cartilages; → Which secrete a mucus proper for lubricating the orifice of the glottis.
- d LARYNGEAL, TRACHEAL AND BRONCHIAL CRYPTÆ, follicles which are placed in the thickness of the mucous membrane, which lines the larynx, trachea, and bronchi; → Which secrete the mucosities that lubricate the larynx, trachea and bronchi.

Pharyngeal, Œsophageal, Gastric and Intestinal Cavities.

V. *Apparatuses of the mucous cryptæ of the digestive canal.*

- e AGGLOMERATED PALATO-PHARYNGEAL MUCOUS CRYPTÆ, (Amygdalæ or Tonsils,) an assemblage of follicuii in the form of an almond, situated between the pillars of the velum palati; → Which secrete a viscid fluid which serves to lubricate the bucco-pharyngeal aperture, (isthmus of the fauces.)
- f DISSEMINATED BUCCAL, PHARYNGEAL AND ŒSOPHAGEAL MUCOUS CRYPTÆ, follicles which exist in the thickness of the bucco-pharyngi-œsophageal mucous membrane; → Which effect the lubrication of the interior of the mouth, pharynx and œsophagus.
- g GASTRIC CRYPTÆ, very delicate follicles which are placed along the two curvatures of the stomach, (the glands of Brunner;) → Which secrete the fluid that lubricates the stomach, differing, however, from the gastric juice, which is made up of the saliva and other fluids.
- h DUODENAL CRYPTÆ, numerous follicles, situated in the intra-duodenal folds, (valvulæ conniventes.) (Glands of Peyer.) → Which secrete a fluid which lubricates the duodenal mucous membrane and protects it from the action of bile, etc.

NOTE. The cryptæ of the other small intestines, of the colon, cæcum and rectum, are similarly arranged and perform similar functions to those above described.

VI. *Pancreatic secretory apparatus.*

- **G** The PANCREAS, an assemblage of glandular granulations, which form and lobes lie transversely in front of the 1st vertebra. The Gland is forked at its right or duodenal end; its right extremity is near the spleen, and its texture resembles that of the salivary glands. → 7 The PANCREATICO-DUODENAL DUCT, formed of radicles which originate in the granulations; it is enclosed in the interior of the organ, and opens upon the lower part of the second portion of the duodenum *a*, into which it carries the pancreatic fluid, which is colorless, viscid, and resembles saliva. Like it, it penetrates the bolus of food and mingles with the juices with which that is already impregnated, to be fit for the act of chymification.

VII. *Hepatic secretory apparatus.*

- **H** The HEPATIC GLAND, (Liver, *hepar*,) an agglomeration of a vast number of reddish brown miliary granules, which form a large trilobate parenchyma, that occupies the upper and right side of the abdomen, and is fastened to the diaphragm and surrounding parts by folds of the serous membrane, (the peritoneum) and by cellular tissue.
- **I** The HEPATIC or BILIARY VESICLE, (gall-bladder,) a membranous bag which is adherent to the liver, and serves as a reservoir for the bile which has been secreted by the hepatic granules.
- 8 The HEPATIC DUCT, formed by radicles which originate in the hepatic granules.
- 9 The CYSTIC DUCT, intended (by a retrograde movement) to convey into the gall-bladder the bile which has not been carried out by the hepatic duct into the duodenum, and also to re-convey it into that intestine when it is required.
- 10 The CYSTICO-HEPATO-DUODENAL CANAL, (ductus communis choledochus,) which carries the bile close to the opening of the pancreatic duct.

→ The bile is an oily, yellowish and bitter fluid, and serves for preparing the bolus of aliment during chymification.

Utero-Vaginal Cavity.

VIII. *Vaginal secretory apparatus.*

- i VAGINAL CRYPTÆ, numerous follicles, placed in the thickness of the mucous membrane of the vagina, and opening upon its surface by a very great number of pores, or excretory apertures. → Secrete a whitish mucus, analogous to the semen, but without either its smell or consistence, which lubricates the vagina. During coitus or under venereal excitement, it is profusely secreted.

NOTE. Anatomy has as yet detected no traces of mucous follicles within the cavity of the uterus, nor in that of the utero-ovaric or Fallopian tubes; nevertheless these cavities require to be lubricated.

NON-SECRETORY PARENCHYMATA, CLASSED AMONG THOSE WHICH DO SECRETE.

APPENDIX.

- *A* THYROID PARENCHYMA, commly called *Thyroid Gland.* → A body lying in front of the larynx, granular and fatty, and often containing vesicles which enclose an adipose fluid; → Has no excretory ducts, and its uses unknown.
- *B* THYMIC PARENCHYMA, (the *Thymus Gland.*) → It is looked upon as a post-sternal gland, situated in the fœtus in front of the trachea, and in the adult, behind the sternum. It consists of graules which are collected into globules. → Secretes a milky fluid, which lies within the lobes themselves without being excreted, (uses unknown.)
- *C* BRONCHIAL PARENCHYMATA, commonly called *Bronchial Glands,* → Little blackish bodies, placed chiefly about the bifurcation of the bronchi. → Their uses are unknown.
- *D* SPLENIC PARENCHYMA, (Spleen, *Lien.*) → A soft, spongy organ, of a blackish brown color, situated under the left portion of the diaphragm and the last ribs; permeated in all directions by arterial ramifications, by venous vacuolæ in prodigious numbers, and by lymphatic vessels. (Vide the abdominal venous system.) → The uses of the spleen, considered as a *glandular* parenchyma, are not known.
- *E* SUPRA-RENAL PARENCHYMA, (*Glandulæ vel Capsulæ renales.*) → Hollow, flattened and triangular bodies, placed above each kidney. → They contain a reddish brown fluid, the uses of which are unknown.

Apparatuses which have their mouths upon the surface of the serous membrane.

Cranio-vertebral Cavity.

IX. *Intra-cranio-vertebral secretory apparatus.*

- **J** ARACHNOID, or *inter-cerebro-cranial membrane*, formed of two layers, clothing all the exterior of the cerebrum and cerebellum, without penetrating between the anfractuosities or convulsions, and also lining the ventricles. The *spinal arachnoid membrane*, or the inter-spino-vertebral, also lines the whole of the spinal marrow, to which it is slightly adherent. → This membrane allows of the transudation of a serous fluid, called the cerebro-spinal, whose office is to lubricate the whole cerebro-spinal surface, to favor the moving upward and downward of the brain, and to protect that organ and the spinal marrow from sudden shocks.

Thoracic Cavity.

X. *Costo-pulmonary secretory apparatus.*

- **K** The PLEURÆ, or *costo-pulmonary membrane*, consisting of two layers, one of which clothes the entire surface of the lungs, the other those of the ribs and inter-costal muscles. → It pours out, between its folia, a serous fluid, for favoring the sliding of the pulmonary surfaces in the ascent or descent of the ribs, and the dilation of the lungs by the air which is inspired.

XI. *Pulmo-cardiac secretory apparatus.*

- **L** The EXTRA-CARDIAC MEMBRANE, which, on the sides next the heart, lines the *circa-cardiac* fibrous membrane; the two together constituting the *pericardium*. → Pours out, between its layers, an abundant serous fluid, which is destined to favor the dilation of the heart in its movements, and to guard it from the friction of surrounding objects.

Abdominal Cavity.

XII. *Abdomino-intestinal secretory apparatus.*

- **M** ABDOMINO-INTESTINAL MEMBRANE, divided 1st, into the PERITONEUM *b*, which lines all the inner surface of the abdominal cavity, and the intestinal canal *c*, the stomach *d*, the glandular parenchymata *e*, the bladder *f*, and the uterus *g*. 2dly, Into the EPIPLOON, or omentum *h*, the floating portion of the same membrane, which in thin persons, and in a condition of vacuity of the abdomen, is considerable, but is obliterated during pregnancy and extreme intestinal distension. 3dly, Into the MESENTERY *i*, that part of this membrane which is placed between the small intestines: and 4thly, Into the MESOCOLON *j*, the part which is between the fluxures of the colon. → Between the abdominal layer and that which lines the splanchnic viscera which the belly contains, the exhalation of that fluid which is destined to aid in the gliding of all these organs during the act of digestion, and the vacuation of its product, goes on.

Infra-Pelvic Cavity.

XIII. *Extra-testicular secretory apparatus.*

- **N** The EXTRA-TESTICULAR TUNIC, which, towards the testes, lines the fibrous membrane, (the albuginea;) the two together constituting what the older anatomists have called the *tunica-vaginalis.* → This membrane exhales a serous fluid, intended to aid in the gliding motions of ascent or descent of the testicles, in the scrotum which contains them.

Articular Cavities.

XIV. *Articular and extra-tendinous secretory apparatuses.*

- **O** The INTRA-ARTICULAR MEMBRANES, (*synovial capsules, bursæ mucosæ,*) are adherent to the capsular fibrous tissue of the joints, and to the capsular tissue (sheaths) of the tendons; they every where form shut-sacs, and are reflected over the tendons and articular surfaces of the bones. → *Synovia*, or the intra-articular serous fluid, is a little viscid and oleaginous; it lubricates the surfaces of the joints and facilitates their motions.

Apparatuses whose exhalant orifices or excretory ducts open upon the integuments.

Extra-thoracic Secretory Organs.

XV. *Præ-thoracic or mammary secretory apparatus.*

- **P** The MAMMARY GLAND, an assemblage of pulpy lobes, of a white color, intimately connected with each other, forming a flattened hemispherical mass, thicker in the centre than at the circumference, and, in the human species, placed in front of the thorax on either side. → 11 The *excretory ducts of the mamma* (lactiferous tubes) originate in the lobules of the gland, and form the surrounding adipose tissue. They are folded on themselves, are very numerous, and make a reservoir of canals, after which their number is reduced to 15 or 20, which pass to the nipple. → The mammary gland secretes the *milk*, a white, sweet, opaque fluid, intended as the food of children in their early years. It is excreted by suction and the afflux caused by the nipple, a tissue essentially erectile.

Pelvic Secretory Organs.

XVI. *Seminal secretory (or genital) apparatus of the male.*

- **Q** The TESTICLES, testes, or *infra-pelvic seminal glands;* elongated oval bodies of a glandular nature, soft and pulpy, consisting of very delicate seminiferous canals, folded on themselves like a cushion. This collection at the upper part has been called the *epididymis l.* → 12 The *Testiculo-seminal canal*, (vas deferens) which begins at the epididymis or congregation of the seminiferous canals. → As fast as the seminal fluid is secreted in the testicles, it is conveyed by the vas deferens into the vesiculæ seminales.
  These bodies are covered by . . . . . → 13 *The deep, or extra-testicular, (vaginal tunic.)* 14 *The median, or circa testicular (tunica albuginea.)* 15 *The extra-testicular, muscle (the cremaster.)* 16 *The superficial tunic. (the dartos.)* 17 *The supra-testicular integument, (bursæ or scrotum.)* → Organs which protect the testes.
- **R** VESICULÆ SEMINALES, (or *præ-rectal vesicles,*) a long, tortuous and knobbed membranous reservoir. → 18 The *semino-urethral canals*, (ejaculatory ducts,) very short, being only 6 lines long, and the continuation of the vesiculæ seminales, opening into the urethra. → The seminal fluid remains in its reservoir, (the vesiculæ seminales,) until there exists a sufficient stimulation of the genital organs to provoke its emission, in which case the semino-urethral canals transmit this fluid to the urethra.
- **S** The PENIS, consisting of → 19 *The Canal of the urethra*, (v. 26.) 20 *The corpora cavernoso.* 21 *The glans.* → { A vasculo-nervous erectile tissue, and very pervious to the blood during the venereal orgasm. A very irritable nervoso-spongy tissue, covered by a mucous epidermoid membrane. } → Erectile organs which are the seats of a peculiar stimulus, (that which excites the act of generation.)
- k The EXTRA-PENAL SEBACEOUS CRYPTÆ, placed beneath the corona of the glans as far as the frenum præputii. → They secrete a whitish, thick and cheesy fluid, having a strong smell, intended to lubricate the glans.
- l The PROSTATE GLAND, an assemblage of *vesico-semini-urethral* mucous follicles, triangular in shape, traversed by the ejaculatory ducts, and canal of the urethra. → 22 The *prostato-urethral ducts.* → They secrete a viscid, white fluid which serves to lubricate the canal of the urethra.
- **T** LATERI-URETHRAL GLANDS, (*glands of Cowper,*) small glandular bodies which lie in front of the prostate. → 23 The Glandi-latero-urethral canal, 6 lines in length. → Has the same uses as the prostate land.

XVII. *Urinary secretory apparatus.*

- **U** The KIDNIES, (Renes,) elongated, spheroidal glandular bodies, occupying the lumbar regions. Their external parenchyma is granular, and of a reddish brown color; the inner parenchyma is paler, tubular and mamillary. → 24 *Intra-renal canaliculæ (calices,)* membranous ducts which embrace the papillæ to receive the urine and transmit it to the pelvis of the kidney. → The urine which accumulates in either kidney, is collected in the pelvis by means of the calices, and is carried by the ureters into the bladder.
- **V** INTRA-RENAL CAVITY, (*Pelvis,*) into which the calices open; a membranous sac, opening into the reno-vesical canals or ureters. → 25 The *ureter* or *reno-vesical canal*, a long membranous duct, passing out from each kidney and opening into the bladder.
- **X** The URINARY BLADDER, (vesica urinaria,) an oval musculo-membranous post-pubic reservoir, fastened down by 3 membranous ligaments, an anterior and two posterior ones. On its sides are observable the orifices of the two ureters, and anteriorly the orifice of the urethra. → 26 The URETHRA, or excretory duct for the urine, or *infra-pubic* duct, which is membranous in its prostatic portion, and membrano-spongy for the rest of its length, and perforated with cells (called cells of Morgagni.) → The bladder contains a collection of urine until the necessity for micturation is experienced, by which the diaphragm and abdominal muscles are called upon to assist in its contractions.

Cutaneous Secretory Organs.

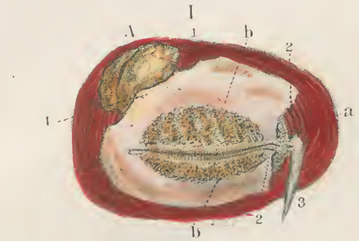
XVIII. *Cutaneous secretory apparatuses.*

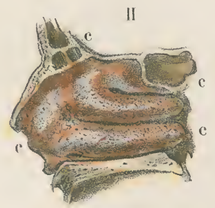
- 12 The sebaceous cutaneous cryptæ, follicles scattered all over the skin, and particularly remarkable on the nose, cheeks, chin, and in the axillæ, and groins.* → These secrete a yellowish liquid, of the consistence of tallow, fited to preserve the flexibility of the skin.
- The *cutaneous exhalants* are constituted by the pores of the skin, by which the sweat escapes.

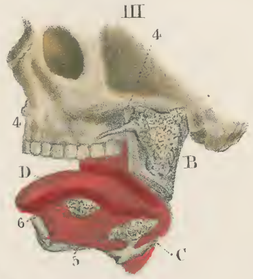
* The ceruminous cryptæ pointed out in the Aesthesiography (19) secrete the cerumen.

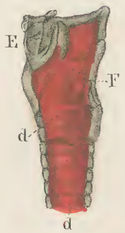
Diacrisiography.

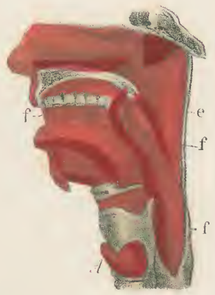
PL.X

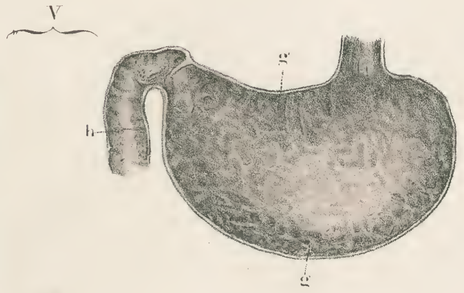


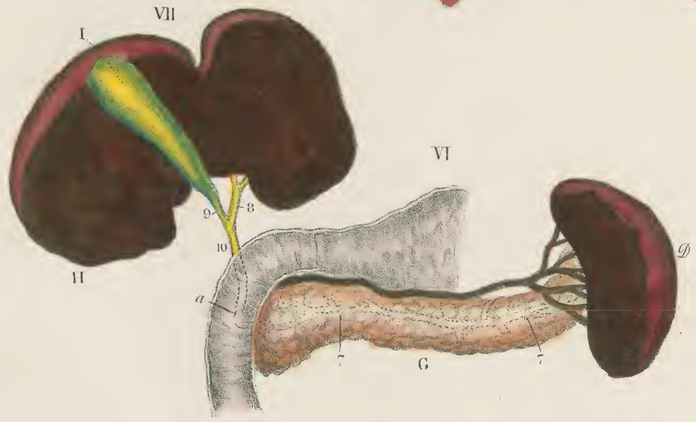


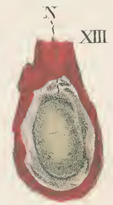


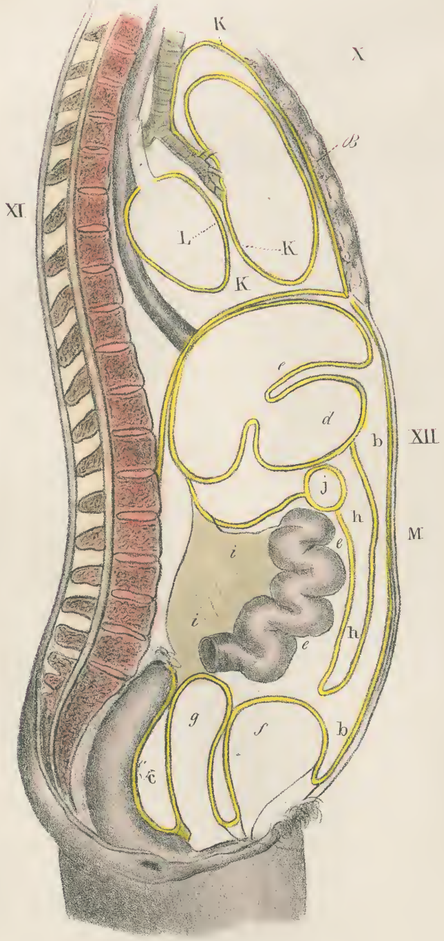


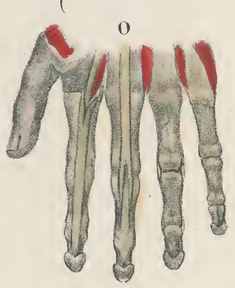


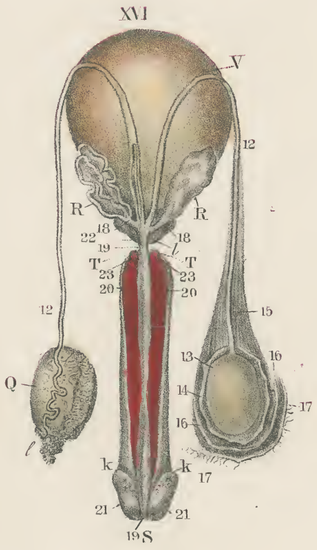


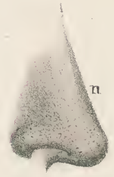


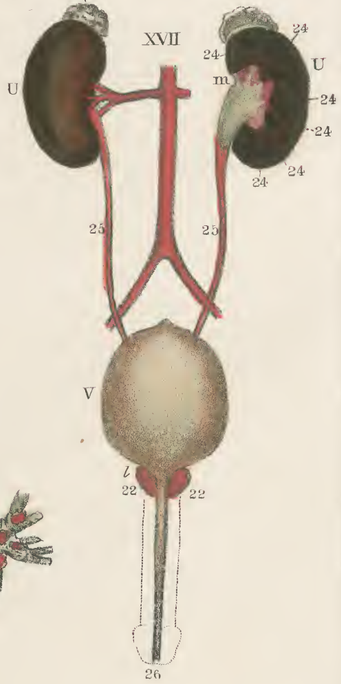












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ANGEIOGRAPHY.

All the vessels which are destined to circulate the fluids whose central motor is the heart, (vide Splanchnography,) are chiefly divided into arteries, veins, and lymphatic vessels.(1)
The arteries are intended for carrying red or oxygenated blood from the left ventricle of the heart to all parts of the body. It is this blood which contains the nutritive molecules that are to be assimilated to our organs, and that from which emanate all the fluids secreted by the glands. (Vide Diacrisiography.)

Supra-diaphragmatic Arteries.

A AORTIC SUPRA-DIAPHRAGMATIC ARTERIAL TRUNK, or THORACIC AORTA.

B AORTO-TRACHELIAN, (or primitive carotid) artery, on the right side, arising from the common AORTO-CLAVI-TRACHELIAN TRUNK, the brachio-cephalic, or arteria *innominata*.

j TRACHELO-INTRA-CRANIAL (or int. carotid) a.

a TRACHELO-EXTRA-CRANIAL (or external carotid) artery.

1 *Anterior* aorto-cardiac (or right coronary) artery.
- 2 Right cardiaco-auricular a.
- 3 Right cardiaco-ventricular a.
- 4 Anterior and posterior inter cardiac a.

5 *Posterior* aorto - cardiac (or left coronary) a.
- 6 Anterior left cardiaco - ventricular (longitudinal) a.
- 7 Posterior left cardiaco - ventricular (transverse) a.

9 Right aorto-bronchial (or lower bronchial) a.
Left aorto-bronchial (or lower bronchial) a.

b Trachelo-thyroidal (or upper thyroidal) artery. 1st branch of ext. carotid.
- 10 Supra-thyroidal (laryngeal) a.
- 11 Infra-thyroidal a. (distr. to the thyr. gl.)
- 12 Præ-thyroidal (anastomotic) a.

c Trachelo - infra - lingual (lingual) a. 2d branch.
- 13 Infra-linguo-muscular a. (d. to the hyoideii m.)
- 14 Infra-linguo-epiglottic a. (d. to the dorsum of the tongue).
- 15 *Lower* infra (or sub) lingual a.
- 16 *Upper* infra-lingual (raninal) a

d TRACHELO-PALATI-PRÆ-MAXILLARY (facial or ext. maxill.) a. 3d br.
- 17 Palato-pharyngeal (lower or ascending palatine) a.
- 18 Palato-glanduli-maxillary a.
- 19 Palato-muscular a. (d. to the digastric, stylo-hyoidal and internal pterygoid muscles.)
- 20 Palato-infra-mental (sub-mental) a.
- 21 Præ-maxillo-muscular a. (d. to masseter, depressor ang. oris and buccinator m.)
- 22 *Lower* præ-maxillo-labial(or lower coronary) a.
- 23 *Upper* præ-maxillo-labial (or upper coronary) (labio-nasal) n.
- 24 Præ-maxillo-nasal (inferior nasal) a.

e TRACHELO-OCCIPITAL (or occipital) a. 4th branch.
- 25 Occipito-muscular a. (d. to the digastric, sterno-mastoid, complexi, recti, transverse and splenii muscles.)
- 26 Occipito-intra-cranial (posterior mastoid) a. (d. to the dura-mater.)
- 27 Occipito-extra-cranial (occipito anastomotic) a.
- 28 Occipito-post-vertebral a.

f Trachelo - pharyngeal (inferior or ascending pharyngeal) 5th branch.
- 29 Pharyngo-muscular a. (pharyngeal branch.) (d. to the anterior, lateral and constrictor muscles of the neck.)
- 30 Pharyngo-intra-cranial (or basilar) a.

g Trachelo-post-auricular, (or posterior auricular) a. 6th branch.
- 31 Post-auriculo-parotideal a. (d. to the parotid gland.)
- 32 Post-auriculo-intra-tympanic (stylo-mastoid) a. (d. to the mastoid apophysis, auditory canals, tympanum and labyrinth.)
- 33 Post-auriculo-muscular a. (d. to the splenius, trapezius, post-auricular, sterno-hyoid, digastric, and sterno-mastoid m.)

h Trachelo-præ-auricular (superficial temporal) a. 7th branch.
- 34 Post-auriculo-conchineal a.
- 35 Præ-auriculo-maxillary (transverse facial) a. (d. to the masseter and orb. palpebrarum m.)
- 36 Muscular-præ-auricular a. (d. to the temporal, masseter and zygomatic muscles.)
- 37 Præ-auriculo-conchineal (anterior auricular) a.
- 38 Præ-auriculo-frontal (anterior anastomotic temporal) a.
- 39 Præ-auriculo-occipital (posterior anastomotic temporal) a.

i TRACHELO-POST-ZYGOMATIC or internal maxillary) a. 8th branch.
- 40 Post zygomato-tympanic and articular a.
- 41 Post-zygomato-muscular a. (d. to the pterygoid, pharyngeal, temporal and staphyline muscles.)
- 42 Post-zygomato-infra-cranial (middle meningeal) and orbitar a.
- 43 Inferior post - zygomato - dental and mental (inferior dental or maxillary) a.
- 44 Post-zygomato-temporal (deep temporal) a.
- 45 Post-zygomato-maxillo and buccal (buccal) a.
- 46 Upper post-zygomato-dental (alveolar) and extra-buccal a.
- 47 Post-zygomato-infra-orbitary a. { Infra-orbito-præ-maxillary a.
- 48 Post-zygomato-palatine (upper palatine) a.
- 49 Post-zygomato-intra-nasal and intra-maxillary (spheno-palatine) a.

k INTRA - CRANIO - ORBITAR (opthalmic) a. 1st branch of int. carotid.
- 50 Orbito-extra-ocular (lach.) a. { Oculo-m. (upper and outer) a. / Oculo-lachrymal a. / Oculo-palpebral (or ext. palpebral) a.
- 51 Orbito-intra-ocular (ciliary) a.
- 52 Orbito-muscular (upper and lower muscular) a. (d. to straight and oblique muscles of the eye.)
- 53 Orbito-intra-osseous (or anterior and posterior ethmoidal) a. (d. to the ethmoidal and frontal sinuses.)
- 54 Orbito-nervi-ocular a. (central a. of the retina.)
- 55 Orbito-frontal (frontal.)
- 56 Orbito-palpebral (palpebral) a.
- 57 Orbito-extra-nasal (nasal) a.

l Cranio-inter-cerebral a. the *anterior* and *posterior* (the communicating of Willis.)

m Cranio-cerebri-intra-lobal (ventricular of choroid) a. (d. to the pia-mater and optic thalami.)

n Cranio-cerebri-meso-lobal (callous) a. { 58 Inter-lobal (anterior communicating) a. / 59 Circa-lobal a.

o *Median* cranio-cerebral (middle or anterior cerebral) a. { 60 Cerebro-circa-lobal a.

C The AORTO-CLAVI-HUMERAL (subclavian) artery, on the right side issuing from the AORTO-CLAVI-TRACHELIAN (brachio-cephalic, or innominate) artery.

A Continuation of the SUPRA-DIAPHRAGMATIC ARTERIAL AORTIC TRUNK, or THORACIC AORTA.

Post-clavicular (subclavian) portion.

p Post-clavi-trachelo cranial (vertebral) a.
- 61 Trachelo-muscular a.
- 62 Posterior trachelo-meningeal (or posterior meningeal) a.
- 63 Cranio-post-spinal (posterior spinal) a. (anastomotic post-spinal) a.
- 64 Cranio-præ-spinal (anterior spinal) a.
- 65 Lower cranio-cerebellal (inferior cerebellal) a.
- 66 Junction of the *right* and *left* trachelo-cranial artⁿˢ. (basilary or meso-cephalic trunk). { 67 Upper cranio-cerebellal (upper cereb.) a / 68 Posterior cranio-cerebral (lobal or posterior cerebral) a.

69 Post-clavi-thyroidal (lower thyroidal) a.

q Post-clavi-trachelian (or cervical) a.
- 70 Ascending trachelian (or deep cervical) a.
  - 71 Lower trachelo - muscular a. (d. to the trapezius, angular. serratus, scalenus and splenius m.)
  - 72 Middle trachelo - muscular a. (d. to the small complexus, and posterior rectus m.)
  - 73 Upper trachelo - muscular a. (d. to the digastric m. and to those of the occiput.)
- 74 Transverse trachelian (transverse cervical, or post-scapular) a.
  - 75 *Upper* trachelo-muscular (superficial cervical) a. (d. to the trapezius and lev. scapulæ.)
  - 76 *Lower* trachelo-muscular a. (d. to the rhomboidcus, serra us major and trapezius.)
- 77 Trachelo - supra - scapular a.
  - 78 *Anterior* supra - scapulo - muscular a. (d. to the sterno-thyroid and sterno-hyoid m.)
  - 79 *Posterior* supra - scapulo - muscular a. (d. to the scalenus, supra-spinatus and trapezius.)
  - 80 *Lower* supra-scapulo-muscular (præ-scapular) a.
  - 81 *Outer* supra-scapulo-muscular a. (d. to the infra-spinatus and deltoides m.)

r Post-clavi-thoracic (or int. mammary) a.
- 82 Thoraco-inter-pleural or anterior mediastinal a. (d. to the anterior mediastinum, bronchi, thymus, pericardium and pleura.)
- 83 Thoraco - diaphragmatic a. (or upper diaphragmatic) a. (giving off pericardial, thymic, and mediastinal branches.)
- 84 *Anterior* thoraco-inter costal a.
- 85 Thoraco-sternal a.
- 86 Muscular and anastomotic thoraco-abdominal a.

s Post-clavi-costal (superior inter-costal) a.
- 87 Costo-post-spinal a. (d. to the post-spinal muscles and vertebral canals.)
- 88 First inter-costal a.

Infra-clavicular (axillary) portion.

89 *Superficial* extra - clavi - thoracic (upper or external thoracic) a.
- Thoraco-muscular a. (d. the inter-cost. externi and pectoralis min. m.)
- Thoraco-glandular a. (d. to the axillary gland.)
- Thoraco-cutaneous a.

90 Extra-clavi-supra-thoracic (scapulo-thoracic or acromial) a.
- Thoraco-muscular (upper) a. (d. to the subclavius and deltoides m.)
- Lower thoraco-muscular a. (d. to the pectorales, sub-scapularis, serratus and trapezius.)
- Thoraco-articular a. (d. to the scapulo-humeral articulation.)

91 *Deep* EXTRA-CLAVI-THORACIC (long thoracic or external mammary) a.
- Thoraco - muscular a. (d. to the pectoralis minor and serratus major m.)
- Præ - scapulo - muscular (outer) a. (d. to the teres minor, major and sub-scapularis m.)

92 Extra - clavi - præ - scapular (subscapular) a.
- Lower præ scapulo - muscular a. (d. to the serratus, inter-costales and sub-scap. m.)

93 Extra - clavi - præ - humeral (anterior circumflex) a.
- Præ-humero-muscular a. (d. to the coraco-brach. latiss. dorsi, diceps, deltoides and infra - spinatus m.)
- Præ-humero-articular and osseous a.

94 Extra-clavi-post-humeral (posterior circumflex) a.
- Post-humero-muscular a. (d. to the diceps, teres minor, deltoides, triceps.)
- Post-humero-articular a.

Humeral portion (brach. a.)

95 Humero-muscular a.
- Internal muscular a. (d. to the coraco-brachialis, biceps, and brachialis-internus m.)
- Outer muscular a. (d. to the triceps and deltoides m.)

96 Humero-cutaneous and osseous a.

97 Humero-epicondyloid, or posterior humeral, (external collateral) a.
- Humero-muscular a. (d. to the triceps, and supinator long.)
- Humero-cutaneous and osseous a.

98 Humero - epitrochlean (anterior humeral, internal collateral, ramus anastomoticus magnus) a.
- Humero-muscular a. (d. to the brachialis internus, pronator and triceps m.)
- Humero-articular a.

Infra-humeral portion (brachial artery.)

t HUMERAL-RADIAL artery—(radial a.)
- 99 Radio-epicondyloid (or anterior radial recurrent) a. { Epicondylo-muscular a. (d. to the pronator teres, supinators, rad. int. and triceps ext.) / Epicondylo-articular a.
- 100 Radio-muscular a. (d. to the pronator, radialis externus, flexor sublimis, flex. long. poll. m.)
- 101 Radio-articular a.
- 102 *Superficial* radio - palmar (superficialis volæ) a. { 103 Palmi-muscular a. (d. to m. of the thumb.) / 104 Palmar a (superficial palmar arch.)
- 105 Radio - dorsi - carpal a. (dorsal a. of the carpus.)
  - 106 Carpo-articular a.
  - 107 Upper carpo dorsi-polliceal a. (dorsal a. of the thumb.)
  - 108 Carpo-dorsal a. (dorsal arch.)
  - 109 Carpo-metacarpal (inter-osseous) a. { Meta-carpo-digit.
  - 110 Lower-carpo-dorsi-poll. a. (int. dors. of thumb.)
  - 111 Carpo-palmar a. (decp palm. arch.) { 112 Palmar a. of the thumb. / 113 Palmar inter-metacarpal (inter-osseous) a. / 114 Digital palmar a.

u HUMERO-CUBITAL artery—(ulnar a.)
- 115 Cubito-præ-epitrochlean (anterior ulnar recurrent) a.
- 116 Cubito-post-epitrochlean (posterior do do) a.
- 117 Cubito - inter-radio-cubital (inter-osseous) a. { 118 Radio-cubito-olecranian (posterior radial recurrent) a. / 119 Radio - cubito - carpal a. (dorsal arch, anterior branch.)
- 120 Cubito-muscular a.
- 121 Cubito-dorsi-metacarpal a. { 122 Metacarpo-digital a.
- 123 *Transverse* cubito-palmar a. (superficial palmar arch.) { 124 Palmi-metacarpal a. / 125 Lateral palmi-digital a. (coll. a. of the fingers.)

126 Aorto œsophageal (œsophageal) a.

127 Posterior aorto-inter-pleural (posterior mediastinal) a.

v The ten aorto-costal (or inter-costal) a.
- 128 The ten last costo-intra-spinal a. (twigs from the inter-costal trunks.)
- 129 The ten last inter-costal a. { 130 Twigs of the upper inter-costal. / 131 Twigs of the lower inter-costal.

Infra-diaphragmatic arteries.

D INFRA - DIAPHRAGMATIC AORTIC ARTERIAL TRUNK, or ABDOMINAL AORTA.

F AORTO - ILIAC ARTERY (primitive, or common iliac.)

a Aorto - diaphragmatic (or lower diaphragmatic) a.
- 132 Right infra-diaphragmatic a.
- 133 Left infra-diaphragmatic a.
- 134 Diaphragmato-supra-renal.
- 135 Diaphragm. - œsophageal (pericardiac, or inter-pleural) arteries.
- 136 Diaphragmato-infra-costal a.

E AORTO-GASTRI-SPLENI-HEPATIC a. (cœliac trunk or axis.)
- *b Gastric branch* (or coronary artery of the stomach.) { 137 Gastro-œsophageal. / 138 Posterior and anterior gastric a.
- *c Hepatic branch* (artery.)
  - 139 Hepato-pylori-cystic (pyloric) a. { Hepatic, pyloric and cystic arteries.
  - 140 Hepato-gastri-epiploic (or right gastro-epip.) a.
    - 141 Gastro - duodenal and pancreatic arteries.
    - 142 Gastro - pyloric arteries.
    - 143 Gastro-epiploic arteries.
    - 144 Gastric arteries.
- *d Splenic branch* (artery) { 145 Spleno-pancreatic (upper pancreatic) a. / 146 Spleno-gastri-epiploic (left gastro-epiploic) a. / 147 Spleno-gastric a. (vasa brevia.) / 148 Splenic arteries.

e Upper AORTO-MESENTERIC (mesenteric) a.
- 149 Mesentero-pancreatic (lower pancreatic) a.
- 150 Mesentero-colico-duodenal (upper right colic) a. { Colic and duodenal a.
- 151 Mesentero-colico-cœcal (lower right colic) a. { Colic and cœcal arteries.
- 152 Mesentero-enteric (intestinal) a. 18 or 20 twigs.

f Aorto-supra-renal (capsular or super-renal) a. { 153 Supra-reno-diaphragmatic a. / 154 Supra-reno-glanduli lumbar a.

g AORTO-RENAL (emulgent) a. (3 twigs.)

h Aorto-testicular (spermatic or ovarian) a.

i 1st and 2d aorto-lumbar (iumbar) a. { 155 *Upper* lumbo-spinal a. / 156 *Upper* lumbo-abdominal a. } Intra-spinal a. (distr. to quadratus lumb. and trans. abd. m.)

j Inferior AORTO - MESENTERIC (mesenteric) a. { 157 Mesentero-colic (*left upper colic*) a. / 158 Mesentero-colico rectal (*left lower colic*) a. { 159 Colic and rectal (upper hæmorrhoidal) a's.

k 3d and 4th aorto - lumbar (lumbar) a. { 160 *Middle* lumbo-spinal a. / 161 *Middle* lumbo-abdominal a. } Intra-spinal a. (to the psoas mag. quad. lumb. and glutei m.

l Aorto-præ-sacral (middle sacral) a.
- 162 Sacro-lumbar (5th lumbar) a. { 163 *Lower* lumbo-spinal (intra-spinal) a. / 164 *Lower* lumbo - abdominal a. (d. to the psoas and quadratus m.)
- 165 Sacro-spinal a. (d. to the sacrum, sacro-lumbalis m. and rectum.)

m ILIO-PELVIC (hypogastric, or internal iliac) ARTERY.
- 166 Pelvi-iliaco-lumbar (ilio-lumbar) a. { 167 Iliaco-lumbar a. (d. to the psoas and iliacus m. and spinal canal.) / 168 Iliaco-transverse (d. to the same m. and the bone.)
- 169 Pelvi-sacral (sacro-lateral) a.
- 170 Pelvi-infra-pubic (obturator) a.
  - 171 *Anterior* infra-pubio-femoral a. (to the lev. ani. obtur. int. et ext. long and short adductors, gracillis and pectineus.)
  - 172 *Posterior* infra - pubio - femoral a. (d. to the obtur. quadratus, gemelli, long and short adductor m. and the joint.)
- 173 Pelvi - post - iliac (gluteal or posterior iliac) a.
  - 174 *Deep* post-iliac a. (d. to the mid. and minor glutei m.)
  - 175 Superficial post - iliac a. (d. to the gluteus max. and med. and sacro - sciatic ligament.)
- 176 Pelvi-post-femoral (ischiatic) a.
  - Muscular pelvic artery, (to the pyramidal, obturator levator ani. m.)
  - Post-femoro-iliac artery, (articular.)
  - Muscular post-femoral a. (gluteus max. and diceps m.)
- 177 Pelvi - umbilical (umbilical) a. { (In the fœtus it is continued under the name of umbilico - placentar.)
- 178 Pelvi - vesical, (vesical) prostatic, seminal and rectal, (middle hæmorrh¹.).a. { In the male only (d. to the bladder, its neck, the prostate, ureter vesiculæ seminales and rectum.)
- 179 Pelvi-uterine (uterine) a. { In the female only (d. to the vagina, bladder, uterus, its tubes, the ovaria and the peritoneum.)
- 180 Pelvi-vaginal (vaginal) a.
- 181 Pelvi-pubic (internal pudic) a.
  - 182 Pubio-trochanterian a.
  - 183 Pubio - rectal (lower hæmorrhoidal) a.
  - 184 Pubio-perinæal (transversa perinæi) a. (d. to the trans. perinæi, constrictor vag. and sphincter ani.)
  - 185 Pubio-penal (artery of the penis in the male.) { Superf. penal (dorsal) a. / Deep penal a. (a. of the corp. cavernosa.)
  - 186 Pubio-clitorideal (in the female.)

n ILIO - FEMORO - TIBIAL A. (external iliac, femoral and popliteal arteries combined.)

Continuation of the AORTO-ILIAC, (or primitive iliac) ARTERY.

187 Ilio-supra-pubic (*epigastric*) a. { Supra-pubio-præ-abdominal a. (d. to the peritoneum, to the præ-abdominal muscles, to the inguinal glands, cremaster m. and testes.)

188 Ilio-intra-abdominal (circumflexa-iliaca) a. (d. to the iliac muscles.)

189 Femoro-præ-pubal (*inguinal*) arteries, d. to the glands, skin and mus.)

190 Femoro- { scrotal (*in the male,*) / vulvar (*in the female,*) } (*external pudic*) a.

o DEEP FEMORAL ARTERIES, (arteria-profunda.)
- 191 Femoro-infra-trochanterian (circumflex external artery.)
- 192 Femoro-infra-pubic a. (d. to the joint, to the adductor, gracilis, diceps, semi - tendinosus, semi - membranosus, gemelli quadrati, obtur. ext. pyramidalis, and to the trochauter.)
- 193 Deep femoro - muscular (perforating) a. (to the glut. max. triceps. biceps, rectus, semi-memb. semi-tend. great trochanter and femur.)

194 *Superficial* femoro-muscular a. (to the adductor, gracilis, sartorius, rectus, triceps m. and the skin.)

195 *Internal* femoro-condyloid, (internal articular) a. (d. to the triceps, the inner condyle and the articulation.)

196 *External* femoro-condyloid, (external articular) a. (to the diceps, triceps, outer condyle and the articulation.)

197 Superficial femoro-post-tibial a. (the gemelli, or surales, and the post. a's. of the calf of the leg.)

198 Inter-femoro-tibial (inter-articular) artery, (d. to the interior of the articulation.)

199 Internal tibio-infra-articular a. (d. to the popliteus m. rotula and joint.)

200 External tibio-infra-articular a. (d. to the triceps, mus. and joint.)

p PRÆ-TIBIAL (OR ANTERIOR TIBIAL) ARTERY.
- 201 Tibio-præ-articular (tibial recurrent) a.
- 202 Tibio-muscular a. (d. to the tib. anticus, extensor comm. aud poll. ped. and the peronei m.)
- 203 Internal tibio-malleolar (malleolar) a.
- 204 External tibio-malleolar a. (d. to the short extensor of the great toe, and abductor of small toes.)
- 205 Tibio-supra-tarsal (pedal) (dorsal of the foot.) { 206 Supra-tarsal anastomosing (tarsal arch.) { 207 Transverse supra-tarsal a. / 208 1st, 2d, 3d, 4th, 5th tarso - supra - metatarsal and metatarso supra-digital (metatarsal) a.

209 Tibio-peroneal (fibular a.) { 210 Posterior fibular a. (d. to the soleus, long flexor of the toes, two peronei and os calcis.) / 211 Anterior-fibular a. (d. to the ext. com. dig. ped. ext. min. dig., to the malleolus exterius, astragalus and cuboides.)

q POST-TIBIAL (posterior tibial) ARTERY.
- 212 Tibio-muscular a. (d. to the soleus, flex. com. tibialis posticus, and tendo Achillis.)
- 213 Tibio - infra - tarsal (internal plantar) a. (d. to the abductor m. of the great toe, short flex. of toes, short flex. of great toe, and ossa calcis. astragalus and scaphoides.)
- 214 Tibio - infra - tarso-metatarsal, (external plantar) a. { 215 Infra-tarso-muscular a. (d. to the abd. musc. of the great toe, short flexor of the toes, abductor of the little toe. / 216 Infra-tarso-extra-digitular a. / 217 Infra-tarso-metatarsal a. / 218 Infra-tarso-polliceal a. / 219 Metatarso-digital a.

The System of Vessels which are without the great circulation.

CENTRAL THORACIC, (*or pulmonary*) CIRCULATORY APPARATUS
(veins and arteries.)

G CARDIACO-PULMONARY *venous trunk* (pulmonary a.) *which carries the blood of the right ventricle into the lungs.*
- *r* The *right* pulmonary vein (for the right lung.) { 220 *Upper* pulmo-lobar vein. / 221 *Middle* pulmo-lobar vein. / 222 *Lower* pulmo-lobar vein.
- *s* The *left* pulmonary vein (for the left lung.) { 223 *Upper* pulmo-lobar vein. / 224 *Lower* pulmo-lobar vein.

225 *Upper* lobi-pulmonary a.
226 *Median* lobi-pulmonary a.
227 *Lower* lobi-pulmonary a.
- *t Right* pulmo-cardiac arterial trunks (pulm. veins.)

228 *Upper* lobi-pulmonary a.
229 *Lower* lobi-pulmonary a.
- *u Left* pulmo-cardiac arterial trunks (pulm. veins.)

H PULMO-CARDIAC *arterial trunk,* (pulmonary vein) *which brings back the red blood from the lungs into the left auricle of the heart.*

CENTRAL ABDOMINAL CIRCULATORY APPARATUS
(venous diverticulary.)

230 Placenti-umbilico-hepatic vein.
231 *Right* hepatic veins.
232 *Left* hepatic veins.
233 *Right* gastric veins.
- *v* Hepatic (or *right central abdominal*) veins.

234 Pylorico-gastric v's.
235 Cystico-gastric v's.
- *x* Gastric (*or upper central abdmi.*) v. (coronary of the stomach.)

236 Colico-mesentero-splenic (post-mesenteric, or lower mescraic) v.
237 Duodeno-splenic (duodenal) veins.
238 Gastro-epiploico-splenic (left gastro-epiploic) veins.
239 Gastro-splenic (gastric) veins.
240 Pancreatico-mesenteric (pancreatic) veins.
241 Entero-mesenteric (intestinal) veins.
242 Gastro-epiploico-mesenteric (right gastro-epiploic) v.
243 Colico-mesenteric (right colic) veins.
- *y* Splenic, (*or left central abdominal*) veins.
- *z* Mesenteric, or *lower central abdominal* v. (upper mesenter.)

I HEPATO-GASTRI-SPLENI-MESENTERIC *venous trunk,* (vena portæ.)

(1) These canals are subject to great variations in their positions; those which are the most constant are set forth in this table. The names which they bear point out their situation, their course, their place of departure and of arrival.

Angeiography.

PL. XI.

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ANGEIOGRAPHY.—Continued.

The veins return the blood from all parts of the body to the heart, after it has supplied the nutritive particles, and produced the secretions. This de-oxygenated blood, that is to say,—this blood, thus deprived of its arterial qualities, and grown blackish, is emptied into the right ventricle of the heart, after it has become loaded with the fluid matters which have been taken up by the lymphatic vessels.*

Supra-diaphragamatic Veins.

SUPERFICIAL VEINS OF THE HEAD.

1 *Superficial* fronto-temporal veins.
2 *Upper* occipito-temporal veins.
3 *Deep* fronto-temporal veins.
4 *Deep* supra-orbito-temporal veins. } a *Deep* temporal vein.
5 *Deep* anastomotic palpebro-temporal venous *plexus.*
6 *Deep* supra-temporal veins.
7 *Deep* infra-temporal veins.
8 *Deep* temporal articular veins.
9 *Lower* occipito-temporal veins.
10 Præ-auriculo-temporal veins.
11 *Superficial* articular-temporal veins.
12 Parotido-temporal veins.
13 Post-auriculo-temporal veins.
14 Infra-maxillo-temporal veins.
15 Fronto-nasal v. (frontal or preparata.) { 16 Supra-naso-maxillary vein (dorsal of the nose.)
17 Supra-palpebro-maxillary veins.
18 Latcri-naso-maxillary (nasal) veins.
19 Infra-palpebro-maxillary (internal inferior or palpebral) v.
20 Supra-labio-maxillary (great upper labial or coronary) v.
21 Zygomato-maxillary (external inferior palpebral) vein.
22 Anguli-labio-maxillary (external labial) or coronary vein.
23 Extra-musculo-maxillary v. (d. to the masseter and buccinator m.)
24 Infra-labio-maxillary (lower labial) v.
25 Infra-linguo-maxillary (or raninal) v.
26 Infra-mento-maxillary (sub-mental) v.
27 Laryngo-trachelian v.

c Maxillo-trachelian v. (facial or outer maxillary.)

b Temporo-trachel. or superficial temporal veins.

d *Superficial* TRACHELIAN vein, (or facial branch.)

DEEP VEINS OF THE HEAD.

28 Supra-cerebro-intra-cranial (or upper cerebral) veins. } e Intra-cranio-occipital (or upper longitudinal) sinus.
29 Intra-cerebro-supra-cerebellal (or veins of Galen.) } g Supra-cerebello - occipital sinus, (straight or double, posterior horizontal.)
f Inter-cerebro-supra-cerebellal (or lower longitudinal sinus.)
30 Supra-cerebellal veins (or superior of the cerebellum.)
31 Cerebello-occipital (or lower cerebel.) v's.
32 Infra-cerebro-occipital (lower cerebel.) v's.
i Middle occipito-trachelian sinus, (or double occipital.)

h *Lateral* occipito-trachelian sinus, (double lateral sinus.)

33 Supra-orbitary (superciliary) v. } 35 Orbito - sphenoidal vein, (or opthalmic.)
34 Intra-orbitary veins, (d. to the eyelids,—muscles, lach. gland, iris, choroid coat, and retina.)
36 *Anterior* cerebro-sphenoidal veins.
37 *Posterior* cerebro-sphenoidal v's.
38 Meningo-sphenoidal veins.
j Supra-sphenoidal (coronary) sinus.
k Inter-occipito-petrous diverticulary sinus (upper petrous.)

l Sphenoido-petrous (cavernous) sinus.

n Petro-trachelian (or lower petrous) sinus.

m *Transverse* diverticulary basilo-petrous sinus.
39 Pharyngo-trachelian (upper pharyngeal) v.
40 Palati-linguo-trachelian (lingual) v.
41 Infra-thyroido-trachelian (upper thyroid) v.

o *Deep* TRACHELIAN vein, (sinus of the jugular v. or cerebral branch.)

A *Deep* TRACHELO - THORACIC, (or internal jugular) vein.

LATERAL VEINS OF THE HEAD.

42 Temporo-supra-zygomatic veins. } 43 Supra-zygomato-trachelian veins.
44 Intra-naso-pharyngeal v's. } p Pharyngo-post-zygomatic venous plexus, (pharyngeal venous plexus.)
45 Intra - bucco - pharyngeal (palatine, alveolar and infra-maxillary veins.)
46 Intra-maxillo-post-zygomatic vein.
47 Præ-auriculo-trachelian vein.
48 Post-auriculo-trachelian vein.
49 *Ascending* musculo-trachelian vein.
50 Occipito-trachelian vein.
51 *Transverse* musculo-trachelian vein.
52 Mento-præ-trachelian veins.
53 Musc. and cutanei-præ-trachelian v. } 55 Præ-trachel. v.
54 Infra-thyroido-præ-trachelian veins.
56 Supra-scapulo-trachelian (trachelo-scapular) vein.

q Post - zygomato-trachelian (internal maxillary, or deep facial) vein.

B *Superf.* TRACHELO - THORACIC (or external jugular) vein.

C THORACO - CARDIAC - VENOUS TRUNK, (or vena cava superior.)

SUPERFICIAL VEINS OF THE SCAPULAR LIMBS.

57 *Superficial* pollici-palmar veins. } r *Superficial anastomotic* palmar veins. (superficial palmar arch.) { 62 *Ext.* palmi-cubital (basilic) v. / 63 *Int.* palmi-cub. v. (outer cubital of authors.)
58 *Id.* 2d digiti-palmar v. / 59 *Id.* 3d digiti-palmar v. / 60 *Id.* 4th digiti-palmar v. / 61 *Id.* digituli-palmar veins. } 64 *Ext.* palmi-radial v. (internal of authors. / 65 *Int* palmi-radial v. (rad. extern. of authors.) / 66 *Lower* inter-cubito-radial (anastomtic) veins. / 67 *Upper* inter-cubito-radial (median) veins.
68 *Superficial* pollici-dorsal veins. } 69 Inter-dorso-palmi-radial veins.
70 2d *Idem* digiti-dorsal v. / 71 3d *Idem* digiti-dorsal v's. / 72 4th *Idem* digiti-dorsal v's. / 73 Digituli-dorsal veins. } t *Anastomotic superficial* dorsal veins of the hand (dor. arch.) { 74 Dorsi-radial v's. / 75 Extra-radial v's. / 76 Inter-humeral (anastomotic) v's. / 77 Extra - humeral (ext. collat.) v.

s Cubito-humeral (*basilic*) v.

DEEP VEINS OF THE SCAPULAR LIMBS.

78 Digiti-dorso-metacarpal v. (or dorsal of the fingers and metacarpus) { 79 *Anast.* metacarpo-dorsi-carpal (dorsal anastomoses of the carpus.) { 80 Lower carpo-inter-radio-cubital (dorsal inteross. double.) { 81 Outer inter-radio-cubito-præ - epicondyloid v's. / 82 Inner inter-radio-cubito-præ - epicondyloid v's. } 84 Præ-epicondylo-radial (recurrent) veins. / 83 Intra - præepicond. v.

u Radio-humeral (*cephalic*) veins.

85 Epitrochleo-radial veins.
86 Digiti-latero-metacarpal v. (inner and outer of each finger.) { v Anastomotic metacarpo-palmi-carpal v. (deep palmar arch.) { 87 Carpi-radio-epicondyloid (deep internal radial) vein. / 88 *Internal* carpo - cubital (int. cub.) (int. brach.) vein. / 89 *Upper* or *palmar* inter-radio-cubital (following the double dorsal interosseous v.) } 90 Cubito-infra-epicond. v. / 91 *External* carpo-cubital (inner cubital) (deep external brachial v.) { 92 Cubito - epicondyloid (the junction of the cubital vein with the brachial.) / 93 Cubito-supra- epicondyloid (or recurrent) vein, emptying into the basilic.

x Epicondylo-humeral (or *brachial*) veins.

D HUMERO-THORACIC vein, (*the axillary and sub-clavian united.*)

C THORACO - CARDIAC VENOUS TRUNK, (*vena cava superior.*

VEINS OF THE CRANIAL AND THORACIC CAVITIES.

94 Intra-cranio-vertebral v.
95 Intra-vertebral v.
96 Extra-vertebral, or communicating v. } y *Diverticulary* intra-vertebral sinuses.(1) } 98 Vertebri-humero-thoracic v. (vertebral veins.)
97 Musculi-trachelo-ver. v.
99 Thyroido-humeri-thoracic (inf. thyroidal) v.

100 Inter-pleuro-post-sternal (anterior mediastinal) vein. } 102 Post - sterno - humero - thoracic (internal mammary) vein.
101 Diaphragmato-post-sternal (upper diaphragmatic) v.
103 First-vertebro-costal vein (1st intercostal.) } 104 Costo - humeri - thoracic (1st intercostal) vein.
105 Thymo-thoracic (thymic) veins.
106 Vertebro - inter - pleuro - thoracic veins. (posterior mediastinal.)
107 Bronchio-inter-abdomino-thoracic. (bronchial) veins.
108 The ten last vertebro - costal veins (inter costal.) } 109 Costo-inter-abdomino-thoracic (inter - costal) veins. } z *Diverticulary* inter-abdomino-thoracic (azygos.)(2)
110 Lombo-inter-abdomino-thoracic veins (lumbar v.)
111 Pericardio-thoracic veins.
112 Supra-cardio-thoracic (cardiac) veins.

C THORACO - CARDIAC VENOUS TRUNK, (*vena cava superior.*)

* In like manner as the arteries, the venous and lymphatic vessels bear names which indicate their situation, track, place of arrival and departure.

(1) These sinuses communicate, moreover, with the trachelo-thoracic, (internal jugular) the intercostal and lumbo abdominal veins.

(2) The inter-abdominal veins, on the left side, are divided into upper trunk and lower trunk.

Infra-diaphragmatic Veins.

SUPERFICIAL VEINS OF THE PELVIC LIMBS.

113 Infra pedi-cutanei-tibial veins.
114 Supra pedi-cutanei-tibial veins.
115 Malleoli-cutanei-tibial veins.
116 Post-malleoli-cutanei-tibial veins.
117 *Super. cutaneous* præ-tibial veins.
118 *Superior* cutaneous posterior-tibial v.
119 *Intra*-condyli-cutanei-femoral veins.
120 *Cutaneous* præ-femoral veins.
121 *Cutaneous* post-femoral veins. } *aa* Tibio-cutanei-femoral vein (*vena saphena interna* vel major.)

122 Extra-pedi-cutanei-peroneal veins.
123 *Cutaneous* præ-peroneal veins.
124 *Cutaneous* post-peroneal veins.
125 Extra-condyli-cut. peroneal veins. } *bb* Peroneo-cutanei-femoral vein. (*vena saphena externa* vel minor.)

DEEP VEINS OF THE PELVIC LIMBS.

126 Infra-digiti-metatarsal (digital) vein.
127 *Anterior* anast. infra-metatarsal veins.
128 1st, 2d, 3d, and 4th infra-metatarsal v. (or plantar inter-osseous.) } 130 *Ext.* metatarso-post-tibial, or external plantar v.
129 *Posterior* anastomotic infra-metatarsal veins (plantar arch. } 131 *Int.* metatarso-post-tibial or internal plantar v.
132 Intra-pedi-post-tibial v. (internal digital of the great toe.)
133 Peroneo-*anastomotic*-post-tibial v.
134 *External* post-tibial v.
135 Extra-peroneal vein. } *dd Double* peroneo-tibial vein (peroneal or fibular.)

ee Double post-tibial v. (*post. tibial.*)

136 *Posterior* extra-femoral v.
137 *Posterior* intra-femoral v.
138 Supra-digiti-metatarsal (upper digital) v.
139 *Anterior* supra-metatarsal anastomotic v.
140 1st, 2d, 3d, and 4th supra-metatarsal veins (dorsal inter-osseous.) } *ee* Metatarso-præ-tibial (or 1st anterior tibial v.)
141 *Posterior* supra-metatarsal-anastomotic veins.
142 *Anterior* metatarso - supra - tarsal vein (anterior malleolar.) } *ff* Tarso-præ-tibial v. (or 2d anterior tibial v.)
143 *Posterior* metatarso-tarsal v. (post. malleolar.)
144 Supra-peroneo-præ-tibial (anterior recurrent) v.
145 *Anterior* extra-femoral veins.
146 *Anterior* intra-femoral veins.
hh Post-femoral v. (or deep fem.)

gg Post-tibio-femoral vein, (the trunk of the external fem. of the posterior tibial and popliteal v's.)

VEINS OF THE PELVIS.

147 Post-femoro-pelvic v. (ischiatic.)
148 *Upper* extra-iliac v. (upper external circumflex v.) } 150 Posterior ilio-pelvic (or gluteal) v.
149 *Lower* extra-iliac v. (lower external circumflex v. of authors.)
151 Cavernoso-penal veins (or cavernous v.) } 153 Penio-pelvic (or dorsal of the penis) (clitoridо - pelvic in the female.)
152 Utero - penal (transverse) veins.
154 Peroneo-pelvic v.
155 Recto-pelvic v. (lower hæmorrhoidal v.)
In the female. { 156 Vagino-pelvic. / 157 Utero-pelvic. / 158 Prostato-pelvic. / 159 Semino-pelvic. }
In the male. } Veins,
160 Vesico-pel. (ves.) v.
161 *External* infra-pubic v. } 163 Infra-pubio-pelvic v.
162 *Internal* infra-pubic v.
164 Sacro-pelvic (obturator) and lower sacral (sacro-lateral) veins.
165 Lumbo-pelvic (ilio-lumbar) veins.

ii Post. pelvic v. (common ischiatico-gluteal trunk.)

kk Anterior pelvic (or common pudic) v.

ll Pelvi-iliac (hypogastric) vein.

ABDOMINAL VEINS.

166 Scroto-supra-pubic v.
167 Vulvo-supra-pubic v. (ext. pudic v.)
168 Inguino supra-pubic v. (to the glands and skin.) } *mm* Supra-pubio-iliac vein. (epigastric.)
169 Cremastero-supra-pubic v.
170 Peroneo-supra-pubic v.
171 Sacro-iliac veins (upper and middle sacral veins.)
172 Intra-iliac veins (vena-circumflexa-iliaca.)
173 Lumbo-iliac veins (ilio-lumbar veins.)
174 Lumbar (spinal and muscular) veins. { 175 Lumbo-abdominal (lumbar) veins. / 176 Testiculo-abdominal (spermatic) v's. / 177 Reno-abdom. (emulgent or renal) v's. / 178 Supra-reno-abdominal (capsular) v's. / 179 Hepato-abdominal (hepatic) v. / 180 Aorto-abdominal veins. / 181 Diaphragmato-abdom. (diaphragm.) v.

E FEMORO-ILIAC-INFRA-ABDOMINAL veins, (the femoral and iliac veins united.)

F ABDOMINO-CARDIAC-VENOUS TRUNK, (*vena cava inferior.*)

Note. Of all organic parts, the veins and the lymphatic vessels are the most liable to anomalies; the latter have therefore been treated of, as it respects regions, much more vaguely than any other part of the vascular system.

With few exceptions, the distribution of the veins is similar to that of the arteries.

Appendix.

THE SYSTEM OF LYMPHATIC VESSELS.

A nutritive apparatus destined to effect absorption. The canals of which it is constituted take root upon the outer and inner surfaces of relation, and empty into the great veins in the neighborhood of the heart, in order to convey the lymphatic fluid into the organ, where, mixing with the venous blood, it is soon projected into the lungs, and acquires the properties of arterial blood.

Supra-diaphragmatic Lymphatic Vessels.

182 Palmi-radio-humeral vessels.
183 Palmi-cubito-humeral ves.
184 Dorsi-radio-humeral ves.
185 Dorsi-cubito-humeral ves.
186 Humeral vessels and glands.
187 Scapulo-humeral vessels. } *un* Supra-humero-thoracic (axill.) glandular plexus or ganglion. } 188 Glanduli-humero-trachelo - supra - thoracic ves.

189 Præ-cranio-maxillo-trachelian (infra-maxillary) ves.
190 Lateri-cranio-trachelian (præ-auricular) ves.
191 Post-cranio-trachelian (post-auricular) ves.
192 Intra-cranio-trachelian (meningeal or extra-cerebral) ves.
193 Pharyngo-trachelian ves. } *oo* Trachelian glandular plexus. } 194 Glanduli-trachelo-supra-thoracic ves.

195 Supra-diaphragmato-post - sternal (anterior diaphragmatic) ves. } *pp* Post-sternal glandular plexus.
196 Inter-pleuro-post-sternal ves.
197 Extra and inter-costo-post-sternal ves. } 198 Inter-glanduli-post-sterno-clavicular v.
199 Præ - cardiaco-post - clavicular ves. } *qq* Post-clav. glandular pl. } 201 Glanduli-post-clavicu-lo-trachelo- supra-thoracic v.
200 Pericardiaco - post - clavicular ves.

202 Extra and inter - costo - vertebral ves.
203 Spino-præ-vertebral ves.
204 Pleuro and inter-pleuro - vertebral ves. } *rr* Præ-vertebral glandular plexus. } 207 Glanduli-præ-vertebri-abdomino-thoracic v.
205 Post-cardiaco-præ-vertebral ves.
206 Supra - diaphragmato - præ - vertebral (posterior diaphragm.) ves.

Infra-diaphragmatic Lymphatic Vessels.

208 Hepato-infra-diaphragmatic ves.
209 Gastro-infra-diaphragmatic ves.
210 Spleno-infra-diaphragmatic ves.
211 Pancreato-infra-diaphragmatic v.
212 Supra-reno-infra-diaphragmatic v.
213 Epiploico-infra-diaphragm. ves. } *ss* Infra-diaphr. glandul. plexus (cœliac.) } 214 Glanduli-infra-diaphr. abomino-thoracic ves.

215 Colic ves.
216 Mesocolic ves. } *tt* Mesocolic glands. } 217 Glanduli-mesocolici-abdomino-thoracic ves.

218 Entero-mesenteric ves.
219 Mesenteric ves. } *uu* Mesenteric glands. } 220 Glanduli-mesenteri-abdomino-thoracic ves.

INTRA-PELVIC VESSELS.

221 Penio-femoral ves.
222 Extra-iliaco-femoral ves.
223 Post-femoral ves.
224 Extra-femoral ves.
225 Præ-femoral ves.
226 Post-tibio-femoral ves.
227 Extra-pedi-femoral ves.
228 Supra-pedi tibi-femor. ves.
229 Intra-pedi-tibi-femoral ves. } *vv* Femoro-pubal (inguinal) glandular plexus. } 230 Inter - glanduli-femoro - pelvic v. } *xx* Pelvic (or iliaco-lumbar) gland. plex. } 231 Glanduli-pelvi-abdomino-thoracic ves.

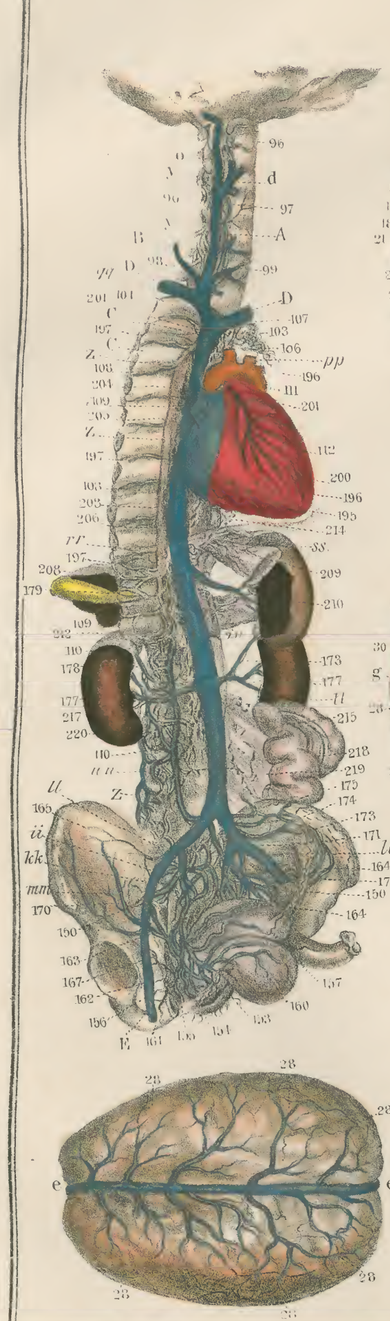
H ABDOMINO - THORACIC CANAL emptying into the left humero-thoracic (or subclavian) vein, (thoracic duct.)

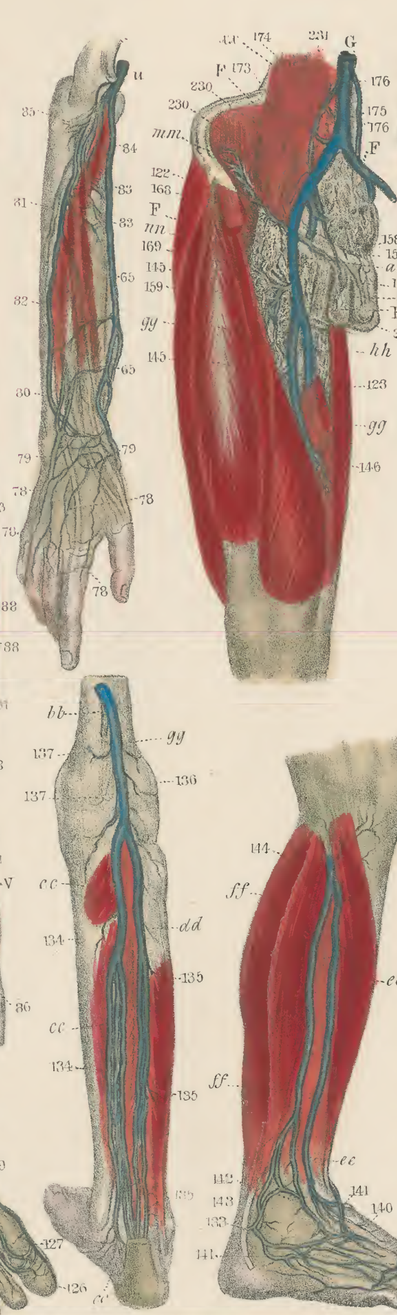
G SHORT TRACHELO - SUPRA - THORACIC TRUNK (or right great lymphatic vein.)

** The above vessels, upon the left side, empty themselves partly into the humero-thoracic vein, and partly into the abdomino-thoracic canal.

Angeiography.

PL. XII.





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NEUROGRAPHY.

THE APPARATUSES OF THE CENTRES OF THE SYSTEM OF NERVES.

Central Apparatus of the Cerebro-Spinal Nervous System.

The assemblage of organs which preside over the acts of the life of relation, (viz. intelligence, the sensations, motion and sensibility,) which are contained in the bony case formed by the bones of the head, and in the canal formed by the vertebral column.

CEREBRAL APPARATUS,—Contained within the Cranium.

Note. The description of the cerebral apparatus is that in which ancient anatomists least excelled. It includes a multitude of parts of which mention was made solely with reference to their configuration; but whose special uses, were to them, almost entirely unknown. Equally ignorant were they which were the fundamental parts, which the first, and which the second in the order of formation, and of the origin of the medullary fibres, and of that of the nerves. It is only subsequently to the discoveries of modern anatomists, and of Gall, Tiedeman, Magendi, Desmoulins and Serres in particular, that it has been possible to systematize the study of this apparatus of the organism, in which we find, not a single centre, but several centres of action, all of which depend more or less upon each other, and form that general relation known by the term *consensus*.

A THE CEREBRAL BULB, (*Rachidian of Chaussier,*) or *medulla oblongata*.
The foundation of the cerebral organs, containing within it the 4th ventricle *a*.
It constantly exists in the four classes of vertebrated animals at every period of existence. It is the centre of excitation, connected with the most important vital functions.
The upper part presides over general sensibility and motility, and over the perception of sensations, with the exception of sight. The lower presides over the acts of preservation, or respiration, and nutrition.

- a The pyramidal or ANTERIOR BULBARY FASCICULI, which transect each other to their origin. Until the third month of fœtal existence, they form only, as in birds, reptiles and fishes, a wide and flat strip.
  Lesion of these fasciculi, destroys the power of regulating the movements of volition, and the bond of action (consensus) between the cerebrum and the medulla spinalis.
  - 1 Fibres which are reinforced by those which come from the protuberance,—and which they transect.
  - 2 Fibres which traverse the protuberance without transecting each other.
    - d Cerebral or BULBO-CEREBRAL-PEDUNCLES, which exist from the moment of formation, but are not covered by the cerebral protuberance until the 4th month.
      - f The POSTERIOR CEREBRAL *bulgings* (*thalami optici*) a round and bulky mass of converging fibres, which afterwards expand in the form of a fan. They supply a root to the 2d pair of nerves, (the optic or visual.) These masses exist at every age, and in all vertebrated animals; the bulk is always in proportion to that of the lateral lobes. They are the nutritive foci of the lobary, or hemispheric fibres. Injury inflicted on them, is destructive to the sight, and to the motions of the scapulary limbs.
        - 7 Fibres which expand for immediate distribution to the cerebral lobes.
        - g ANTERIOR CEREBRAL *bulgings* (or *corpora striata*) which expand in the form of a fan. The rudiments of these bodies exist from the beginning; injury of them gives rise to a loss of motion in the pelvic limbs, and their destruction compels the animal to run forward.
          - h The CEREBRO-LATERAL *lobes* (or *hemispheres*) a mass of fibrous cerebral substance, which passes off in radii from the thalami optici and corpora-striata, folding itself from below upwards, above and behind, so as successively to cover the corpora striata, the thalami optici, and tubercula quadrigemina, and the cerebellum.
            The upper internal and external surface of this mass is furrowed to form the convolutions. The lower surface is divided by fissures into three lobes; an anterior, a posterior, and middle one.
            The cerebral lobes are the organs of intelligence; their surface, including the sulci or anfractuosities, are the seats of the various moral qualities discovered by Gall.
      - 8 *Intra-peduncular-fasciculi.*
        - 9 *Intra-peduncular* (or mammillary) eminences, which are apparent only at the end of the 3d month.
          - 10 *The trigone* CEREBRAL (the anterior and posterior pillars of the intra-cerebral vault, (or fornix,) which covers the *lateral ventricles*, β. and forming posteriorly the *cornua ammonis* (pes Hipocampi) and the *unciform eminence*. γ
            - 11 *Inter-ventricular septum* (*lucidum*) containing between its two laminæ, the inter-ventricular sinus, δ (the Fossa-Sylvii, or 5th ventricle of Cuvier.)
              - 12 INTER-LOBARY *cerebral commissure* (*messo-lobe, corpus callosum*) joining the cerebral lobes, and forming the upper part of the intra-cerebral vault. It begins to appear towards the end of the 2d month. Lesions of this part destroy the possibility of articulating sounds and occasion idiocy.
      - 13 *Grey intra-peduncular-tubercle* (tuber cinereum) constituting a portion of the floor of the 3d ventricle.
        - 14 *Intra-peduncular appendix* (*pituitary gland*) in front of the 3d ventricle ε.
      - 15 Medio-cerebral, or extra-ventricular medullary prolongations, on the edges of the 3d ventricle. ε
        - 16 *Medio-cerebral appendix* (*pineal gland*) behind the 3d ventricle, and appearing only after the 4th month.
          - i CEREBRO-SUPRA-ETHMOIDAL (*pedicles olfactory nerves; or first cerebral pair*) hollow and having a bulging at their extremity. In the 2d month their cavity is continuous with the lateral ventricles.
- b The olivary or MIDDLE BULBARY FASCICULI (corpora olivaria,) which are smooth until the 6th month of fœtal life, and then swell out in the form of an olive; their lesion destroys the motions of the heart, the exercise of the senses and of facial expression.
  - 5 Fibres which go to the tubercula quadrigemina.
  - 3 Fibres which are inter-crossed with their partners to form the mass of support for the tubercula quadrigemina.
    - j MEDIO-CEREBRAL TUBERCULA QUADRIGEMINA and supporting mass, which contains within it the aqueduct of Sylvius or *communicating canal*, ξ between the 3d and 4th ventricles.
      This mass exists in all the four classes of vertebrated animals; in the first month of the formation of the human embryo, it is very voluminous, and also in those animals whose central nervous apparatus is very simple; it is, therefore, a fundamental part. Lesion of this part destroys the power of exercising sight and the voluntary motions.
      - 17 Origin of the cerebro-ocular nerves (2d c. pair) (optic.)
      - 18 Origin of the 3d pair, or first cerebro-orbitar n. (common motor, or musculo-ocular n.)
      - 19 Origin of the nerves of the 4th pair, or 2d cerebro-orbitar (pathetici) n. on the sides of the valve of Vicussens.
      - 20 Origin of the 5th pair, or cerebro-supra-sphenoidal (trifacial) n. between the corpora-olivaria and restiformia, and on the upper edge of the 4th ventricle.
      - 21 Origin of the nerves of the 6th pair, or 3d cerebro-orbitar (external) or common motors) n. arising upon the sides of the corpora restiformia.
      - 22 Origin of the the nerves of the 7th pair, or cerebro-tempori-parotideal (facial) n. arising from the corpora restiformia (portio-dura of 7th p.)
      - 23 Origin of the 8th pair, or cerebro-intra-temporal (acoustic, auditory or labyrinthic arising from the lower part of the 4th ventricle (portio mollis of 7th pair according to most anatomists.)
      - 24 Origin of the nerves of the 9th pair, or cerebro-pharyngi-glossal (glosso-pharyngeal) n. between the olivary and restiform bodies.
      - 25 Origin of the 10th pair, or cerebro-visceral (pneumo gastric) n. (par vagum, 8th p. of most writers,) between the olivary and pyramidal bodies
      - 26 Origin of the nerves of the 11th pair, cerebro-hyoido-glossal (hypoglossal) n. (lingual or 9th pair of most writers) between the olivary and pyramidal bodies.
      - 27 Some roots of the spino-cerebro-sub-occipital (12th pair of cer. n) (or spinal accessory) going out from the corpora pyramidalia.
  - 6 Fibres which go to the tubercula quadrigemina.
    - Fibres which turn over into the mass of support of the tubercula quadrigemina and constitute the cerebral (annular) protuberance (or *pons varolii*) η appearing at the 4th month.
- c Restiform FASCICULI, (or posterior bulbary) existing from the earliest periods. Injury to them abolishes respiration and the act of digestion.
  - 4 Retrograde fibres going to the cerebellum.
    - e Cerebellal or BULBO-CEREBELLAL PEDUNCLES; they exist from the earliest period of formation.
      - k CEREBELLAL MEDULARY LAYERS (rhomboidal or ciliary bodies) an oval swelling of the white medullary substance, whence go off radiating fibres to form the lobes or hemispheres of the cerebellum. They exist from the earliest formation; but under a membranous aspect.
        - l The CEREBELLAL LOBES (cerebellum.) The central, lower, interlobary point has been called the middle lobe or appendix vermicularis (vel lobularis): it is a mass of cerebral substance, which from the rhomboid bodies stretches as a nucleus towards the periphery, and is formed of gray, cineritious or cortical matter,* effecting upon the whole surface of the organ, transverse sulci, which appear only about the 5th month. The more perfect the organization of the individual is, the more the cerebrum and cerebellum are developed, and the more numerous and deep the furrows are.
          Injury to these lobes destroys equilibrium and co-ordination of voluntary movements, particularly forward ones, compelling the individual to go backward. The ablation of one lobe only, causes a movement of rotation to the affected side.

THE CIRCA-CEREBRAL MEMBRANE OR PIA-MATER, is of a vascular character, very thin, transparent, and contains a multitude of blood-vessels; its special office is to secrete the cerebral matter, to effect which end, it lines the whole periphery of the brain, penetrates into and clothes its anfractuosities, is reflected at the basis of the cranium, enters and lines the ventricles in every part, and in them, forms the choroid plexuses. It likewise invests the medulla spinalis, and penetrates, through its furrows, into the intra-medullary canal.

THE INTER-CEREBRO CRANIAL OR ARACHNOID MEMBRANE is a serous tissue and will be found described in the Diacrisiography (v. J.) It does not pass into the sulci of the brain.

THE INTER-CRANIO-VERTEBRAL MEMBRANE (DURA-MATER) is a fibrous tissue, (vide the Prel. Exposition, III.) It lines the inside of the cranium and vertebræ.

SPINAL APPARATUS,—Contained in the vertebral canal.

B MEDULLA SPINALIS (rachidiana of Chaussier) (spinal marrow) a thick chord of nervous substance which is white upon its external, and gray on its internal surface. This chord, which at the 2d month of fœtal existence, is made up of two lateral filaments, is at a later period of life, longitudinally divided, before and behind into halves, which communicate by transverse medullary fibres. The anterior or thoracic surface of this chord is composed of two fasciculi placed on either side of the anterior furrow, which end superiorly by intercrossing to form the corpora pyramidalia of the medulla oblongata. Its posterior or spinal surface consists of nervous fibres which are the prolongation of the corpora restiformia, which go without any intercrossing to form the cerebellum; lastly, the lateral portions go to form the corpora olivaria, which give rise to the tubercula quadrigemina.

In a fœtus two months old, the medulla spinalis presents a longitudinal canal in proportion to the anterior sulcus, by which the membrane called pia-mater enters. Superiorly this canal communicates with the 4th ventricle. At this age, also, the medulla occupies the whole intra-vertebral canal as far as the extremity of the sacrum; but at the 9th month stretches only to the 3d lumbar-vertebra, in the adult; lastly, the chord ends at the heighth of the 1st lumbar-vertebra, terminating in a great lumber of nervous infra-spinal chords (the cauda equina.)

The spinal marrow is the chief agent of the transmission of the voluntary movements, and the reservoir of *innervation*, or of nervous power, for the ganglionic apparatus. It seems also, together with the medulla oblongata, to be the foundation, or the basis of formation, of all the other parts of the nervous system.

- m The TRACHELIAN (or cervical) SECTION embracing the vertebræ of the neck, beginning at the occipital hole, and ending below by a bulging whence the nerves of the arm go off.
  The destruction of this portion of the spinal-marrow annihilates the movement and sensibility of the scapulary limbs and the neck, and by it also, the action of diaphragm is prevented.
  - Lower roots of the spino-cerebro-infra-occipital nerve, (12th cerebral pair,) the 1st, 2d, 3d, 4th, 5th, 6th, 7th and 8th spinal pairs, arising from two roots, the one posterior and the conductor of sensibility; the other anterior, and the conductor of motion.
- n The DORSAL SECTION, reaching from the upper bulging as far as the lower one in the interior of the dorsal vertebræ. When destroyed it produced a loss of motility and sensibility in the whole trunk, except in the diaphragm, which has its nerves from the cervical section.
  - 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th and 20th spinal pairs, originating like those above mentioned.
- o The LUMBAR SECTION and appendix, comprising the lower bulging and the infra-spinal nervous chords. Loss of motility and sensibility in the pelvis and lower extremities follows their destruction, and the ejaculation of semen is thereby rendered impracticable (Segalas.)
  - 21st, 22d, 23d, 24th, and 25th, spinal pairs, like the above. The 6 pairs which follow constitute the sacral nerves.
    NOTE. All the roots, anterior and posterior, of these nerves unite in a small tubercle or ganglion, whence afterwards go off the posterior spinal nerves and the anterior spinal nerves. The latter pass on *to form the plexi.*

The principle of motility and sensibility, of which the spinal nerves are the conductors, resides in the part of the spinal marrow, whence they derive their origin.

According to Magendie, the destruction of the anterior fasciculi of the spinal marrow annihilates motion; that of the posterior bundles, sensibility.

The medulla, considered as a whole, is the chief agent of the transmission of voluntary motions, and of the sensibility of the trunk and limbs. It is, moreover, the reservoir of *innervation*, of nervous power for the ganglionic system of nerves, and hence in all its parts it exercises a control over the force of the heart's contraction (Legallois.)

* NOTE.—The cineritious, gray, or cortical cerebro-spinal substance is in the interior of the spinal marrow whilst it is upon the outside of the cerebrum. It constitutes the apparatus for the nutrition of the white medulary substance.

Apparatus of the Ganglionic System of Nerves.

THIS apparatus consists of a series of nervous ganglia of a reddish or grayish color, placed in man, all along from the cranium to the end of the pelvis, in the vicinity of the visceral organs; but chiefly within the thorax and abdomen, in front and on either side of the vertebral column. All the nerves of the life of relation, and which enter into ganglia, are sensible: all those which pass out from them are insensible; the latteral are very numerous and go to all the thoracic and abdominal viscera, to the eye, to the nasal and buccal cavities, to the trachea and muscles of the pharynx, and to all the arteries of the body. They form large plexi, of whose precise mode of action we are as yet ignorant, but which are supposed to be intended for keeping up the regularity and mutual dependance of the functions of the viscera, and to cause them to harmonize with the acts of relative life. Be this as it may, the ganglionic apparatus is most certainly the seat of the ordering of movements not under the dominion of the will. The ganglia intercept the cerebral nervous influence; preside over the circulation of fluids, and molecular composition and decomposition. The ganglionic apparatus exists in all animals which have a distinct nervous system, and would appear to constitute that of invertebrated animals exclusively; nervous communicating filaments establish and maintain the relations which these ganglia hold to each other, and as yet, nothing authorizes us to believe, that some among them produce the others; they seem to be all linked one with another, and to be under a mutual dependance.(1)

I. Ganglia of the Head and Neck.

G UPPER CERVICAL GANGLION, behind the angle of the lower jaw.

- i Gangli-plexo-supra-arterial n. (carotid nerves.) (The ascending branches.)
  - p Supra-arterial trachelo-intra-cranial PLEXUS, (secondary carotid plexus.)
    - 2 Plexi-ganglio-petro-sphenoidal n. (following the carotid artery.)
      - **D** Petro sphenoidal (or cavernous) GANGLION, in the cavernous sinus.
        - 3 Gangli-anastomotic 3d cerebro ocular (6th cerebral pair) n.
        - 4 Gangli-supra-sphenoido-orbitar n. (5th c. p.)
        - 5 Inter-gangli-orbitar n.
    - 6 Plexi-arterial cranio-orbit. n. (with opthalmic artery.)
    - 7 Plexo-gangli-orbitar n.
      - **E** The orbitar, (opthalmic or lenticular) GANGLION, situated on the outer side of the cerebro-ocular or 2d pr. of cerebral nerves.
        - 8 Gangli-anast. orbito-oculi-nasal (5th c. p.) the long root.
        - 9 Gangli-anast. 1st cerebro-orbitar (3d c. p.) the short root.
        - 10 Gangli-iridian n. (12 or 16 ciliary twigs.)
    - 11 Plexi-anastomotic 3d cerebro-orbitar (or 6th pair of cerebral nerves) n.
    - 12 Plexi-anastom. pterygo-tempori-parotideal n. (7th pair, of cerebral nerves.)
      - 13 Pterygo anast. tempori-paroti-deal or temporo-parotido-gangli-pterygoid (vidian n.)
        - **F** Pterygo-maxilli-palatine (spheno palatine) GANGLION, in the pterygo-palatine fissure. (Ganglion of Meckel.)
          - 14 Gangli-intra nasal or supra-palatine n.
            - 15 Intra-nasal, or external supra palatine n.
            - 16 Intra-nasal, or internal supra palatine n.
          - 17 Inter-gangli-supra-maxillo-post-alveolar n. (naso-palatine.)
            - **G** Supra-maxillo-post-alveolar GANGLION, (Naso-palatine) in the hole so called.
              - 18 Gangli-supra-buccal and intra-alveolar n.
          - 19 Gangli-præ-palatine (or great palatine) nerves.
            - Palato-nasal n.
            - " intra-maxillary n.
            - " staphyline n.
            - " intra-alveolar n.
            - " supra-buccal n.
          - 20 Gangli-post-palatine (or middle palat.) n.
            - Palato-amygdalin n.
            - Palatine-staphyline n.
          - 21 Gangli-infra-sphenoidal n.
          - 22 Gangli-intra-nasal, or posterior supra-palatine n. (small palatine.)
          - 23 Gangli-pharyngeal n.
- *Outer branches.*
  - 24 Gangli-anastomotic spino 1st and 2d præ-trachelian nerves.
  - 25 Gangli-plexo-trachelian.
- *Inner branches.*
  - 26 Gangli-musc. trachel. n. (to the rectus anterior, scalenus and longus colli m.)
  - 27 Gangli-pharyngeal n.
  - 28 Gangli-plexi-pharyngeal n.
  - 29 Gangli-laryngeal n.
- *Anterior branches.* (nervi molles.)
  - 30 Gangli-anastomotic cerebro-hyoidi-glossal n. (11th c. p.)
  - 31 Gangli-anastomotic cerebro-tempori-parotideal n. (7th c. p.)
  - 32 Gangli-anastomotic cerebro-visceral n. (10th c. p.)
  - 33 Gangli-plexo-arterial n.
    - q Supra-arterial aorto-trachelian plexus, (common carotid plexus.)
      - 34 Plexo-arterii-aorto-trachelian n.
  - 35 Upper gangli-plexo-cardiac (supr. cardiac) n.

H MID. CERV. or Thyroid GANGLION, on a level with the 5th and 6th cer. verteb.

- *Upper comm'g. branches.*
  - 36 Upper inter-ganglio-cervical n.
- *Outer br.*
  - 37 Gangli-spino, 4th, 5th, and 6th præ-trachelian n.
- *Internal branches.*
  - 38 Gang. plexo-thyroidal n.
    - r Thyroidal plex. (upon the thyroidal artery.)
      - Upper plexo-anast. thoraco-trachelian (anasts. of the recurrent) n.
      - Plexi-thyroidal n.
      - Plexi-œsophageal n.
      - Upper plexi-trachelian n.
      - Plexi-anast. diaphr.
- *Anterior br.*
  - 39 Median-gangli-plexo-cardiac (middle cardiac) n.

I LOWER CERV. GANG. in front of the 7th cerv. vertebra, and of the neck of the first rib.

- *Upper branches.*
  - 40 Median-inter-ganglio-cervical n.
  - 41 Gangli-arterial n. (on the vertebral artery,) (verteb. plexus.)
  - 42 Gangli-musculo-inter-lateri-trachelian n.
- *Ext. br.*
  - 43 Gangli-plexo-arterial n. (upon the sub-clavian and axillary artery.)
    - s Transverse arterial post-clavi-humeral plexus (sub-clavian artery.)
      - Plexi-arterial n.
      - Plexi-anast. spino. 5th, 6th, 7th and 8th præ-trachelian, and 1st præ-dorsal.
- *Internal br.*
  - 44 Gangli-musculo-trachelian n.
  - 45 Gangli-plexo-bronchal n. (pulmonary.)
- *Anterior br.*
  - 46 Lower gangli-plexo-cardiac (lower cardiac) n.

t Supra-cardiac PLEXUS, between the arch of the aorta and the bifurcation of the trachea, (cardiac p.)

- 47 Plexi-aortic n. (anterior branch.)
- 48 Inter plexi-bronchial (pulmonary) n. (posterior br.)
- 49 Plexi-supra-ventricular cardiac n.
- 50 Plexi-infra-ventricular cardiac n.
- 51 Plexi-anast. cerebro visceral n. (10th c. p.)

II. Ganglia of the Thorax and Abdomen.

THORACIC or inter-costal GANGLIA, behind the pleuræ, 11 in number, and connected by filaments of communication.

- **J** 1st Thoracic GANGLION.
  - 52 Lower inter-ganglio-cervical n.
  - 53 Gangli-anastomotic spino-præ-dorsal n.
  - 54 Gangli-musculo-præ-trachelian n. (to the long. colli. mus.)
  - 55 Gangli-plexo-supra cardiac n.
  - 56 Gangli-plexo-bronchial n. (to the pulmonary plexus.)
  - 57 Ganglia-aortic n.
  - 58 Inter-ganglio-thoracic n.
- **K** 2d, 3d, 4th and 5th thoracic GANGLIA.
  - 59 Gangli-anast. spino-præ-dorsal n. (external filaments.)
  - 60 Gangli-plexo-bronchial n. (pulmonary plexus.)
  - 61 Gangli-aortic n.
- **L** 6th, 7th, 8th and 9th thoracic GANGLIA.
  - 62 Inter-ganglio-thoracic n.
  - 63 Gangli-anastomotic spio-præ-dorsal n.
  - 64 Gangli-aortic n.
  - 65 Gangli-plexo-infra-diaphragmatic n. (great splanchnic nerves having 5 roots.)
- **M** Portion of the 9th and 10th thoracic GANGLIA.
  - 66 Inter-gangli-thoracic n.
  - 67 Gangli-anastomotic spino-præ-dorsal n.
  - 68 Gangli-aortic n.
  - 69 Gangli-plexo-infra-diaphragmatic n.
- **N** 11th thoracic GANGLION.
  - 70 Inter-gangli-thoracic n.
  - 71 Supra-gangli-anastomotic spino-præ-dorsal n.
  - 72 Gangli-plexo-renal (small splanchnic) n.

O Plexiform infra-diaphragmatic ganglion, an agglomeration of central ganglia (solar plexus, semi-lunar or opisto-gastric ganglion,) placed beneath the diaphragm and in front of the abdominal aorta.

- Gangli-plexo-infra-diaphragmatic n.
  - u Infra-diaphragmatic PLEXUS.
    - 73 Inter-plexi-infra-gastric n.
      - ff Infra-gastric or coronary plexus of the stomach.
    - 74 Inter-plexi-hepatic n.
    - 75 Plexi-aponeurosi-supra-diaphragmatic n.
- Gangli-plexo-cœliac n.
  - v Cœliac PLEXUS.
    - 76 Plexi-supra-gastric n.
    - 77 Inter plexi-hepatic n.
      - x Right hepatic plexus.
      - y Left hepatic plexus.
        - Plexi-anast. cerebro-visceral n. (10th c. p.)
        - Plexi-pyloric n.
        - Plexi-anast. duodenal n.
        - Plexi-anast. pancreatic n.
- Gangli-plexo-splenic n.
  - z Splenic PLEXUS.
    - 78 Plexi-pancreatic n.
    - 79 Inter-plexi-infra-gastric n.
    - 80 Plexi-splenic n.
- Gangli-plexo-renal n.
  - ll Emulgent or renal PL.
    - 81 Plexi-supra-renal n.
    - 82 Plexi-renal n.
    - 83 Plexi-ganglio-thoracic n.
    - 84 Plexi-ganglio-abdominal n.
    - 85 Inter-plexi-testicular or ovarian n.
      - ss Testicular or ovarian infra-renal (spermatic) PLEXUS.
        - 86 Plexi-testicular or ovarian n.
        - 87 Plexi-urethral n.
        - 88 Inter-plexi-mesenteric n.
- Gangli-plexo-mesenteric n.
  - lt Upper mesenteric PLEXUS.
    - 89 Plexi-pancreatic n.
    - 90 Upper plexi-anastomotic mesenteric n.
    - 91 Plexi-duodenal n.
    - 92 Inter-plexi-renal n.
    - 93 Inter-plexi-aortic n.
      - w Aortic PLEXUS.
        - Plexi-aortic nerves.
    - 94 Infer. inter-plexi-mesenteric n.
      - xx Lower mesenteric PLEX.
        - 95 Lower plexi-anast. mesenteric n.
        - 96 Plexi-ganglio-abdom. n.
        - 97 Plexi-anast. iliac n.
        - 98 Inter-plexi-pelvic (hypogastric n.

Lateri-abdominal (lumbar) GANGLIA.

- **P** 1st Lateri-abdominal GANGLION.
  - 99 Inter-gangli-thoracic n.
  - 100 Gangli-anast. spino-præ-lumbar n.
  - 101 Ganglo-musculo-lumbar n. (to the psoas m.)
  - 102 Gangli-plexo-aortic n.
  - 103 Gangli-plexo-cœliac n.
- **Q** 2d, 3d, 4th and 5th lateri-abdominal. GANGLION.
  - 104 Inter-gangli-abdominal n.
  - 105 Gangli-anast. spino-præ-lumbar n.
  - 106 Gangli-musculo-abdominal and splanchnic n.
  - 107 Gangli-plexo-aortic n.
  - 108 Gangli-arterial n. (to the int. iliac artery.)
  - 109 Inter-gangli-pelvic n.

Pelvic (sacral) GANGLIA.

- **R** 1st, 2d, 3d, 4th and 5th pelvic GANGLIA.
  - 110 Gangli-anast. spino-præ-sacral n.
  - 111 Inter-ganglo-pelvic n.
  - 112 Gangli-plexo-pelvic (hypogastric) n.
    - zz Pelvic PLEXUS (hypogastric)
      - 113 Plexi-utero-anal n.
      - 114 Plexi-visico-seminal n.
      - 115 Plexi-vesical n.
      - 116 Plexi-uterine n.
      - 117 Plexi-vaginal n.
      - 118 Plexi-arterial (hypogastric) n.

(1) As all the ganglia of the head communicate with the ganglionic apparatus of the trunk, by means of the *upper cervical ganglion*, it was necessary to make that the rallying point in the table. The thoracic ganglia end in the *central infra-diaphragmatic ganglion* by means of the *gangli-plexo-infra-diaphragmatic and gangli-plexo-renal* nerves; (the direct communication of the supra-diaphragmatic, with the lateral infra-diaphragmatic, being sometimes wanting.) The *great central ganglion* communicates anew, with the series of abdominal and pelvic ganglia, and furnishes, in a direct manner, the nerves which constitute the plexi called infra-diaphragmatic, cœliac, gastric, hepatic, splenic, mesenteric, renal and infra-renal, testicular and ovarian.

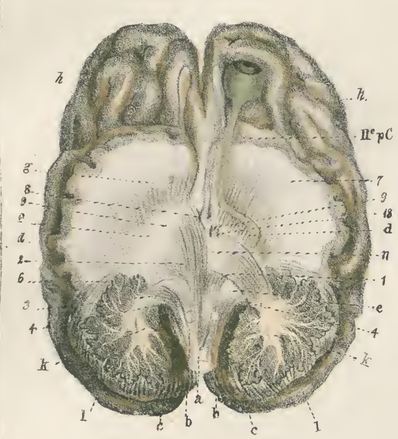
All these ganglia of interior life have received the names of *cervical, thoracic, abdominal*, and *pelvic*, and the plexi which are connected with them have been named from the viscera; whilst the nerves which pass off the spinal marrow, have been called *trachelian, dorsal, lumbar* and *sacral*, from the vertebræ in whose vicinity they lie. The names which have been attached to the nerves point out, at the same time, their situation, track, place of departure, and the organ to which they are distributed.

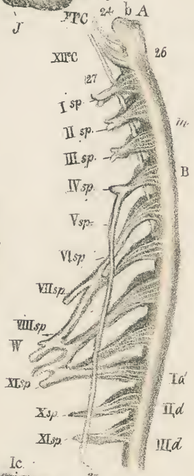
Note. It may be well to repeat here, what is said upon the second page of the work, or the Key to Systematized Anatomy, that the numerals, in this table, represent nervous filaments; that these filaments, when they emanate from a *ganglion*, take for their root the generic word gangli, and as a final the name of the part to which they are sent; and those which issue from *plexi*, begin with the word plexo or plexi.

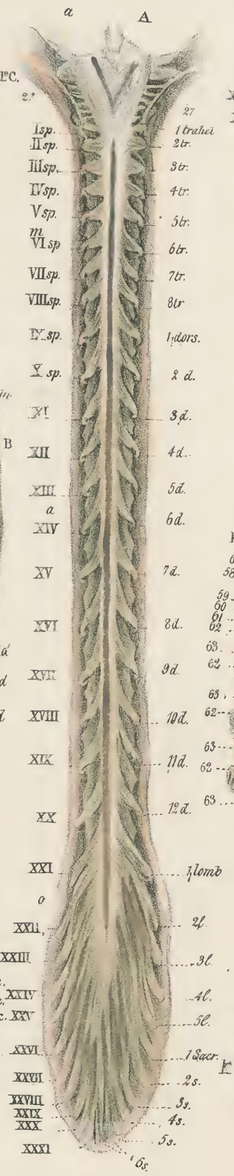
Note. The reader will, doubtless, be surprised that in a work so recent as the present, and of which, that portion which treats of the nervous system is alluded to by the author in terms of much self-gratulation, no mention is made of the labors of Sir C. Bell, together with those of the authors named, to whose investigations so much is attributed. Nor is this all, for in the detail of the functions of the spinal marrow, he will see attributed to Mr. Magendie, the discovery of points to which Mr. Bell has unquestionably the prior right. Mr. Bell's rsearches upon the double functions of the nerves are certainly antecedent to those of Mr. Magendie.

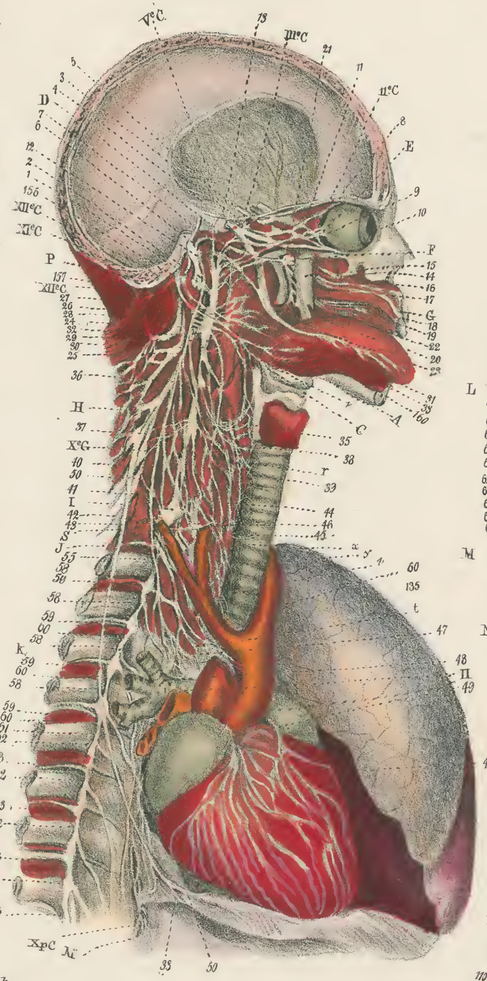
Upon this subject, the reader may consult the papers by *Mr. Shaw*, in the *London Medical Journal*, vol. 48 and 49; *Med. Chir. Trans.* vol. 12; and in the *Quarterly Journal*, vol. 13, and by *Mr. Bell*, in the *Phil. Trans.* for 1821 and 1822, or his work on the "*Nervous System of the Human Body*," embracing the papers delivered to the Royal Society on the subject of the nerves.—*Translator.*

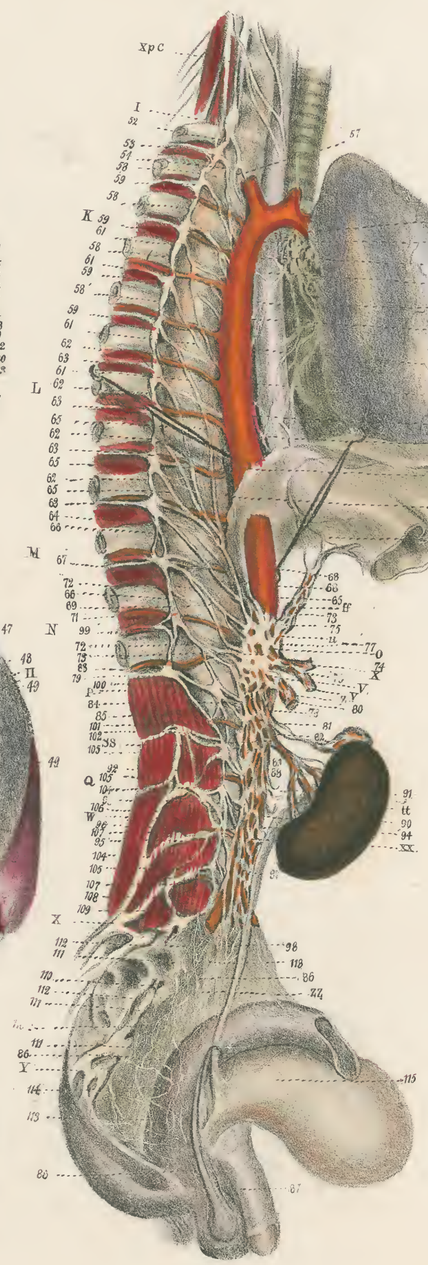
Nevrographie.

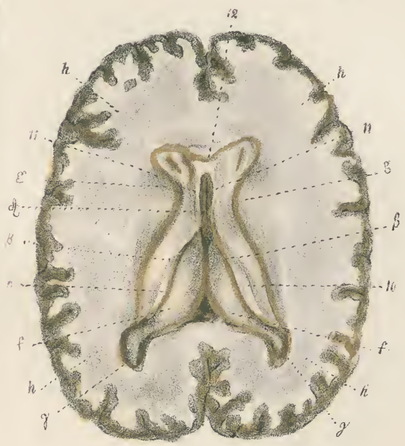












SURG.GEN.

NEUROGRAPHY.—Continued.

POSTERIOR NERVES, (post-spinal roots.)

I PAIR. Spino 1st post-trachel. nerves.
- 1st Post-trachel. musc. n.
  - Musc. atloido-axoi-trachel. n. (to the obl. inf. m.)
  - Musc. occipito-trachelian n. (to the obl. super. m.)
  - Musc. occipito-atloido-trachelian n. (to small rectus posterior m.)
  - Musc. occipito-dorsi-trachelian n. (to large rectus posterior m.)
  - Musc. occipito-dorsi-trachelian n. (to the complexus m.)
- 2 Post-trachelo-mastoidal n.

II PAIR. Spino 2d post-trachel. nerves. (gr. occipit.)
- 6 Post-trachel. musc. n.
  - Musc. atloi-axoi-trach. n. (to the infer. obl. m.)
  - Musc. mastoido-dorsi-trach. n. (to the splenius m.)
  - Musc. scapulo-trachelian n. (to the lev. scap. m.)
  - Musc. occipito-dorsi-trachelian n. (to the great complexus m.)
  - Musc. occip. dorsi-scap. n. (to the trapezius m.)
  - Musc. inter-spino-vertebral n. (to the inter-spinal m.)
  - Musc. occipito-cutanei-frontal n.
- 7 Post-trachelo-cutanei-occipital n.
- 8 Post-trachelo-*anastomotic*-cerebro-tempori-parotideal n. (7th pair) and spino 1st and 3d post-trachelian nerves.)

III PAIR. Spino 3d post-trachel. nerves.
- 12 Post-trachel. musc. n.
  - Musc. inter-lateri-trachelian n.
  - Musc. dorsi-costi-lumbar n. (to the long. dorsi m.)
  - Musc. occip. dorsi. trach. n. (to the gr. compl. m.)
  - Musc. occip. dorsi-scap. n. (to the trapezius m.)
- 13 Post-trachelo-*anast.* spino 2d post-trachelian n.
- 14 Post-trachelo-cutanei-post-trachelian n.

IV PAIR. Spino 4th post-trachel. nerves.
- 18 Post-trachel. musc. n.
  - Musc: occip. dorsi-trach. n. (to the gr. compl. m.)
  - Musc. inter-lateri-spino-trachelian n. (to the inter spinales-dorsi and lumborum m.)
  - Musc. sacro-lateri-spino-vertebral n.
  - Musc. occip. dorsi-scapular n. (to the trapez. m.)
- 19 Post-trachelo-*anast.* spino 3d post-trachelian n.
- 20 Post-trachelo-cutanei-post-trachelian n.

V PAIR. Spino 5th post-trachel. nerves.

VI PAIR. Spino 6th post-trachel. nerves.

VII PAIR. Spino 7th post-trachel. nerves.
- 35 Post-trachel. musc. n.
  - Musc. occip. dorsi-trach. n. (to the gr. com. m.)
  - Musc. inter-lateri-spino-trach. n. (to gr. com. m.)
  - Musc. mast. dorsi-trach. n. (to the splenius m.)
  - Musc. occip. dorsi-scapular n. (to the trapez. m.)
- 36 Post-trachelo-cutanei-post-trachelian n. and dorsal n.
- 37 Post-trachelo-*anastomotic*-inter-post-trachelian and plexi-brachial n.

VIII PAIR. Spino 8th post-trachel. nerves.

IX PAIR. Spino 9th post-dorsal nerves.

NOTE. The names of the spinal nerves point out their situation, track, place of departure and destitution.

ANTERIOR NERVES, (præ-spinal roots.)

I PAIR. Spino 1st præ-trachel. nerves.
- 3d Præ-trachelo-*anast.* n.
  - *anastomotic* spino 2d præ-trachelian n.
  - *anastomotic* cerebro-visceral (10th pair.)
  - *anastomotic* ganglionic n.
  - *anast.* cerebro-hyoidi-glossal n. (11th pair.)
- 4th præ-trachelo-muscular n.
  - Musculi-temporo-infra-maxillary n. (to the temporal m.)
  - Musculi-basilo-trachelian n. (to the rectus m.)
- 5 Præ-trachelo-arterial n. (to the *post.* trachelo-cranial or carotid artery.)

II PAIR. Spino 2d præ-trachel. nerves.
- 9 Præ-trachelo-plexi-trachelian n. . . . . .
- 10 Præ-trachelo-*anast* n.
  - *anast.* spino 1st præ-trachelian n.
  - *anast.* ganglionic n.
  - *anast.* cerebro-visceral n.
  - *anast.* cerebro-hyoidi-glossal n.
  - *anast.* spino 3d præ-trachelian n.
- 11 Præ-trachelo-musculi great basilo-trachel. n.

III PAIR. Spino 3d præ-trachel. nerves.
- 15 Præ-trachelo-plexi-trachelian n. . . . . .
- 16 Præ-trachelo-*anast.* n.
  - *anast.* spino 2d præ-trachelian n.
  - *anast.* ganglionic n.
  - *anast.* spino 4th præ-trachelian n.
- 17 Præ-trachelo-musc. n.
  - Musc. trachelo-scapular n. (to lev. ang. scap. m.)
  - Musc. basilo-trachelian n. (to the rectus major m.)

IV PAIR. Spino 4th præ-trachel. nerves.
- 21 Præ-trachelo-*anast.* n.
  - *anast.* spino 3d præ-trachelian n.
  - *anast.* ganglionic n.
  - *anast.* spino 5th præ-trachelian n.
- 22 Præ-trachelo-plexi-trachelian n. . . . . .

V TRACHELIAN or *cervical* PLEXUS.
- 23 Plexo-*anastomotic*-cerebro-tempori-parotideal n. (the 7th c. p.)
- 24 Plexo-musculi-thoraco-cutanei-labial n. (to the platysma m.)
- 25 Plexo-musc. mastoidi-mento-hyoidal n. (to the digastric m.)
- 26 Plexo-glanduli-infra-maxillary.
- 27 Plexo-mastoidal n.
  - Mastoido-cutanei-occipital n.
  - Mastoido-post-auricular n.
  - Mastoido-musculi-occipito-frontal n.
  - Mast. *anast.* cer. temp. parot. n. (7th p.)
  - Mast. anast. spino 3d post-trachel. n.
- 28 plexo-anguli-infra-maxillary n.
  - Maxillo-*anast.* cerebro-temp. parotideal n. (7th p.)
  - Lower-maxillo-*anast.* supra-sphenoido-pterygo-maxillary n. (5th p.)
  - Maxillo-auricular n.
  - Maxillo-cutanei-parietal n.
- 29 Plexo-supra-clavicular n.
  - Supra-clavicularo-*anast.* cerebro-hyoidi-glossal n. (11th p.)
  - Supra-clavicularo-musc. n. (to the great pectoral m.)
  - Supra-clav. cutanei-præ-thoracic n.
  - Supra-clavicularo-mammary n.
  - Supra-clavicularo-cut. supra-scapular and supra-humeral n.
- 30 Plexo-supra-acromial
  - Supra-acromio-muscular n. (to the deltoid m.)
- 31 Plexo-infra-clavicular n.
  - Infra-clav. musc. n. (infra-scapular.)
  - Infra-clavicularo-musc. scapulo-costal n. (to the serratus major.)
  - Infra-clavicularo-cutanei-axillary n.
- 32 Plexo-post-scapular n.
  - Scapulo-*anast.* sploo-cerebri-infra-occip. n. (12th p.)
  - Scapulo-muscular n. (to the lev. ang. scap. and trapezius m.)
- 33 Plexo-diaphr. (phrenic) n.
  - Gang. diaphragmato-*anast.* n.
  - Supra-diaphrag. and œsophageal n.
  - Infra-diaphragmatic n.
  - Diaph. agin. *anast.* cerebro-visceral and ganglionic n. (10th p.)
- 34 Inter-plexi-brachial n.

W TRACHELO-HUMERAL (*brachial*) PLEXUS.

V PAIR. Spino 5th præ-trachel. nerves.

aa Plexi-trachelo-thoracic branches.
- 38 Post-thoraco-musculi-costal n. (serratus m. m.)
- 39 Præ-thoraco-musculi-costal n. (to the subclavius and pectoral m.) and cutanei-supra-clavicular n.
- 40 Præ-thoraco-thymic nerves.
- 41 Præ-thoraco-*anastomotic* spino 4th præ-trachelian n. and plexi-supra-humeral nerves.

ββ Plexi-trachelo-scapular branches (supra-scap.)
- 42 Scapulo-muscular n. (to the infra and supra-spinati and the teres muscles.)

γγ Plexi-supra-humeral br. (axill. or circumflex n.)
- 43 Humero-musculi-scapular n. (to the sub-scapular, teres major and minor, and deltoid m.) and cutanei supra-humeral n.

δδ Plexi-humero-cutanei-radial branches. (external cut. n. of authors.) These 4 branches are more particularly given off by the spino 4th and 5th præ-trachelian nerves.
- 44 Radio-musculi-humeral n. (to the coraco brach. biceps, and inferior brachial muscles.)
- 45 Radio-cutanei-dorso-digital n.

VI PAIR. Spino 6th præ-trachel. nerves.

εε Plexi-hamero-radial br. (trunk of the great radial n.) coming off more especially from the spino 5th, 6th, 7th, and 8th præ-trachelian and præ-dorsal n.
- 46 Humero-musculi-costo-lumbar n. (latiss. dorsi and triceps m.)
- 47 Anterior and internal humero-cutanei-radial n. (Musc. cut. *anast.*)
- 48 Humero-musculi-supra-epicondyloid m. (to the supinator longus, and radial. externus m.)
- 49 Radio-cutanei-dorso-metacarpal, digital and pollici-phalangian n.
- 50 Radio-cutanei-dorso-digiti 2d and 3d phal. n. (*anastomotic* dorso-metacarpal arch.)
- 51 Radio-musculi-epicondyloid n. (to the supinator brevis, the 3d radialis externus of *authors*, small external radial of *authors*, extensor commun. extensor min. digiti, and flexor-carpi-ulnaris m.)
- 52 Radio-musculi-humero-epitrochlean n. (to the internal cubital of *authors*.)
- 53 Radio-musculi-dorso-1st and 2d metacarpal n.
- 54 Radio-articular-carpal n.

VII PAIR. Spino 7th præ-trachel. nerves.

ζζ Plexi-humero-inter-radio-cubital branches. (the great median n.) coming off more especially from the spino 5th, 6th, 7th, and 8th præ-trachelian and 1st præ-dorsal n.
- 55 Superficial humero-muscular n. (to pronator, radialis anterior, small palmar, and flexor sublimis m.)
- 56 Deep interadio-cubito-musculi-ante-brachial (inter-osseous) n. (Muscular n. (to the flexor profundus-pollicis, and pronator quadratus m.))
- 57 Superficial inter-radio-cubito-ante-brachial n. (to the great palmaris m.
- 58 Inter-radio-cubito-cut. palmi-carpal. (Carpo-*anast.* humero-cutanei-radial n. Carpo-*anast.* humero-radial n.)

Radial branch.
- 59 Superficial radio-carpal n. (anterior of authors.)
  - Carpo-pollicea l n. (radial edge.)
  - Carpo-pollicea l n. (ulnar edge.)
  - Carpo 2d digital n. (radial edge.)
- 60 Deep radio-carpal n. (posterior of authors.)
  - Carpo-musc. pollicea l n. (to the addr. brev. opponens and flex. brev. poll.
  - Carpo 2d digital-palmar n. (ulnar edge.)

Ulnar branch.
- 61 Superf. cubito-carpal n.
  - Carpo 3d digital palmar n. (radial edge.)
- 62 Deep cubito-carpal n.
  - Carpo-cutanei-palmar n.
  - Carpo 3d dig. palm. n. (ulnar edge.)
  - Carpo 4th dig. palm. n. (radial edge.)

VIII PAIR. Spino 8th præ-trachel. nerves.

ηη Plexi-humero-cubital br. (great ulnar n.) coming off more especially from the spino 7th and 8th præ-trachelian and 1st præ-dorsal n.
- 63 Humero-muscular n. (to the triceps m.)
- 64 Humero-cutanei-epitrochlean n.
- 65 Cubito-muscular n. (to the flexor profund. and internal cubital m.)
- 66 Cubito-*anastomotic*-humero-inter-radio-cubital n.
- 67 Cubito-palmi-carpal n.
  - Superf. palmi-carpal n. (Carpo-*anast.* humero inter-radio-cubital (superficial palmar arch.) Carpo-muscular 4th tendino-palmi-phalangian n. Ext. carpo-digital and 5th int. dig.)
  - Deep palmi-carpal n. (Palmi-carpo-musculi 5th digital n. Palmi-carpo-metacarpal-dorsi-phalangian n. P. c. m. supra-phalango-pollici-carpal (1st thenar) n.)
- 68 Cubito-dorsi-carpal n. (Carpo-digital-dorsal n.)

IX PAIR. Spino 1st præ-dorsal nerves.

θθ Plexi-humero-cut. cub. br. (int. cut. n. of a.) coming off more especially from the spino 1st præ-dorsal n:
- 69 Humero-cutaneous and muscular (to the triceps m.)
- 70 Cubito-cutanei-metacarpal and 5th digital n.
- 71 Cubito-*anastomotic*-humero-cutanei-radial n.

POSTERIOR NERVES, (post-spinal roots.)

X, XI, XII, XIII, XIV, XV, and XVI P. Spino 2d, 3d, 4th, 5th, 6th, 7th, and 8th post-dorsal nerves.
- 72 Post-dorsi-musculi-vertebral n. (to the multifidus spinæ m.)
- 73 *Posterior* post-dorso-cutanei-thoracic n:

XVII, XVIII, XIX, and XX P. Spino 9th, 10th, 11th, and 12th post-dorsal nerves.
- 80 Post-dorso-musculi-vertebral n. (like the above.)
- 84 Post-dorso-cutanei-lumbar n.

XXI, XXII, and XXIII P. Spino 1st, 2d, and 3d post-lumbar n.
- 88 Post-lumbo-musc.-vertebral n. (to the sac. spinal m.)
- 89 *Posterior* post-lumbo-cutanei-pelvic n. (gluteal n.)

XXIV, and XXV P. Spino 4th and 5th post-lumbar n.
- 90 Post-lumbo-musculi-vertebral and lumbar n. (to the sacro-lumb. and long. dorsi m.)
- 91 Post-lumbo-cutanei-post-iliac n.

XXVI P. Spino 1st post-sacral n.
- 106 Post-sacro-*anastomotic* spino 5th post-lumbar n.
- 107 Post-sacro-cutanei and musculi-post-iliac n. (to the glut. max. m. and integuments of the nates.)

XXVII, XXVIII, XXIX P. Spino 2d, 3d, 4th post-sacral n.
- 108 Post-sacro-*anastomotic* spino-post-sacral n.
- 109 Post-sacro-cutanei and musculi-post-iliac and coccygeal or anal n.

XXX, XXXI P. Spino 5th and 6th post-sacral nerves.
- 136 *Anastomotic*-post-sacral n.
- 137 Post-sacro-cutanei-anal n.

ANTERIOR NERVES, (præ-spinal roots.)

X and XI PAIR. Spino 2d and 3d præ-dorsal nerves.
- 74 Præ-dorso-musc. n.
  - Musculi-inter-costal n.
  - Musculi-supra and infra-costal n. (to the pect. maj. and post-sternal m.)
- 75 Præ-dorso-cutanei-thoracic and thymic n.
- 76 Præ-dorso-*anastomotic* humero-cutanei cubital (internal cutaneous) and ganglionic n.

XII, XIII, XIV, and XV. PAIRS. Spino 4th, 5th, 6th and 7th, præ-dorsal n.
- 77 Præ-dorso-musc. n.
  - Muscular-intercostal, infra-costal and abdominal n. (to the recti and obl. ext. m.)
- 78 Præ-dorso-cutanei-thoracic and abdominal n.
- 79 Ganglionic præ-dorso-*anastomotic* n.

XVI, XVII, and XVIII PAIRS. Spino 8th, 9th, 10th præ-dorsal n.
- 82 Præ-dorso-musc. n.
  - Lateral musculi-abdominal n. (to the transversus, recti and internal oblique m.)
- 83 Præ-dorso-cutanei-abdominal (anterior and lateral) n.
- 84 Ganglionic præ-dorso-*anastomotic* n.

XIX P. Spino 11th præ-dorsal n.
- 85 Præ-dorso-musc. n.
  - Musc. abdominal and diaphragmatic n. (to the obliquus internus m. and posterior part of the diaphram.)

XX P. Spino 12th præ-dorsal n.
- 86 Ganglionic præ-dorso-*anastomotic* and spino 1st lumbar n.
- 87 Præ-dorso-musc. and cutan. n.
  - Musculi-lumbar n. (to the psoas and quadr. m.)
  - Anterior lateral-musculi-abdominal n. (trans., obl. int., recti and pyramidal m.)
  - Lower cutanei-abdominal m.

XXI, XXII, XXIII, XXIV, and XXV PAIRS. Spino 1st, 2d, 3d, 4th, and 5th præ-lumbar n.

92 Ganglionic præ-lumbo-*anastomotic* and 12th præ-dorsal n.

93 Præ-lumbo-plexi-lumbo-iliac n.

X LUMBO-ILIAC (or lumbar) PLEXUS.

αα Plexi-lumbo-iliac branches coming off from the 1st and 2d præ-lumbar n. (musculo-cutaneous n.)
- 94 Iliaco-cutanei and musculi-abdominal n.
- 95 Iliaco-inguinal n. (Cutaneous inguinal n. Inguinal pubic n. Inguinal scrotal or vulvar n.)
- 96 Iliaco-cutanei-post-femoral and præ-condyloid n:

κκ Plexi-inguinal branch, coming off from the 1st præ-lumbar n. (Genito-crural n.)
- 97 Inguino-scrotal and intra-femoral n.
- 98 Inguino-cutanei-femoral n.
- 99 Inguino-*anastomotic* with the great femoral n.

λλ Plexi-infra-pubic branches coming off from the spino-3d præ-lumbar n. (the obturator n.)
- 100 Infra-pubio-cutanei and musculi-femoral n. (to the obturator, small adductor and rectus internus m.)
- 101 Infra-pubio-musc. n. (to the adductor and obtur. ext. m.)

μμ Anterior plexi-femoral br. coming off from the 1st, 2d, 3d, and 4th præ-lumbar n. (the crural nerve.)
- 102 Femoro-cutanei and muscular n. (to the iliacus, sartorius, rectus, triceps and pectineus muscles, and to the fascia-lata.)
- 103 Fem.-arterial and venous (saphenus-internus n.

νν Plexi-pelvic-branch, coming off from the 4th and 5th præ-lumbar (the lumbo-sacral or sacro-lumbar nerve.
- 104 Pelvi-ischiatic (gluteus) n. (Ischiatico-musculi-post-iliac n. (gluteus med. and min.))
- 105 Pelvi-plexo-sacral (ischiat.) n.

ξξ Internal-plexi-secro-ischiatic branch.

110 Ganglionic præ-sacro-*anastomotic* n.

111 Præ-sacro-plexi-sacro-ischiatic n.

Y SACRO-ISCHIATIC (sciatic) PLEXUS.

οο Plexi-muscular-infra-umbilical and post-iliac n. (to the pyramidalis and glutei-maxim. and minim. m.) coming off from the 1st and 2d præ-sacral nerves.

ῶῶ Plexi-extra-syndesmo-ischiatic n. (pubic or common external hæmorrhoidal n.) coming off from the 3d and the 4th præ-sacral n.
- 112 Ischiato-muscular n. (to the obtur. intern. m.) penal or vulvar n.
- 113 Ischiato-dorsi-penal (to the dorsum-penis) or clitorideal n.
- 114 Ischiato-perineal, anal, scrotal, and urethral (inferior pubic) n.

115 Plexi-cutanei-post-femoral and tibial n., coming off from the 3d præ-sacral n.

σσ Plexi-rectal n. (the middle hæmorrhoidal nerves coming off from the 3d and 4th præ-sacral n.)
- 116 Rectal, recto-musculi-anal (to the sphincter and lev. ani m.) vesical, uterine, vaginal or seminal and prostatic nerves.
- 117 Ganglionic recto-*anastomotic* n.

ττ Upper twigs.
- 118 Femoro-musculi-intra and extra-pelvic n. (to the obturator, gemelli, quadr. and gluteus max. m.)
- 119 Femoro-muscular n. (biceps, semi-tend. and memb. and great adductor m.)
- 120 Femoro-cutanei-post-femoral and tibial n.

υυ Internal or femoro-tibial branch, (internal popliteal or tibial n.)
- 121 Articular femoral n.
- 122 Tibio-cutanei-extra-tarsal-dorsal n. (the external cutaneous musc. cut., or external fibular n.)
- 123 Tibio-post-articular-femoral n.
- 124 Tibio-musculi-femoral and tibial n. (to the triceps, plant. brev. popliteus, tibialis and flex. parv. poll. pedis ms.)
- 125 Tibio-intra-tarsal n.
  - 126 Intra-tarso-infra-met. n.
    - 127 Infra-met. 1st and 2d digital n.
    - 128 Infra-met. 3d and 4th digital n.
  - 129 Extra-tarso-infra-met. n. (ext. plantar.)
    - 130 Infra-met. 4th and 5th digital n.

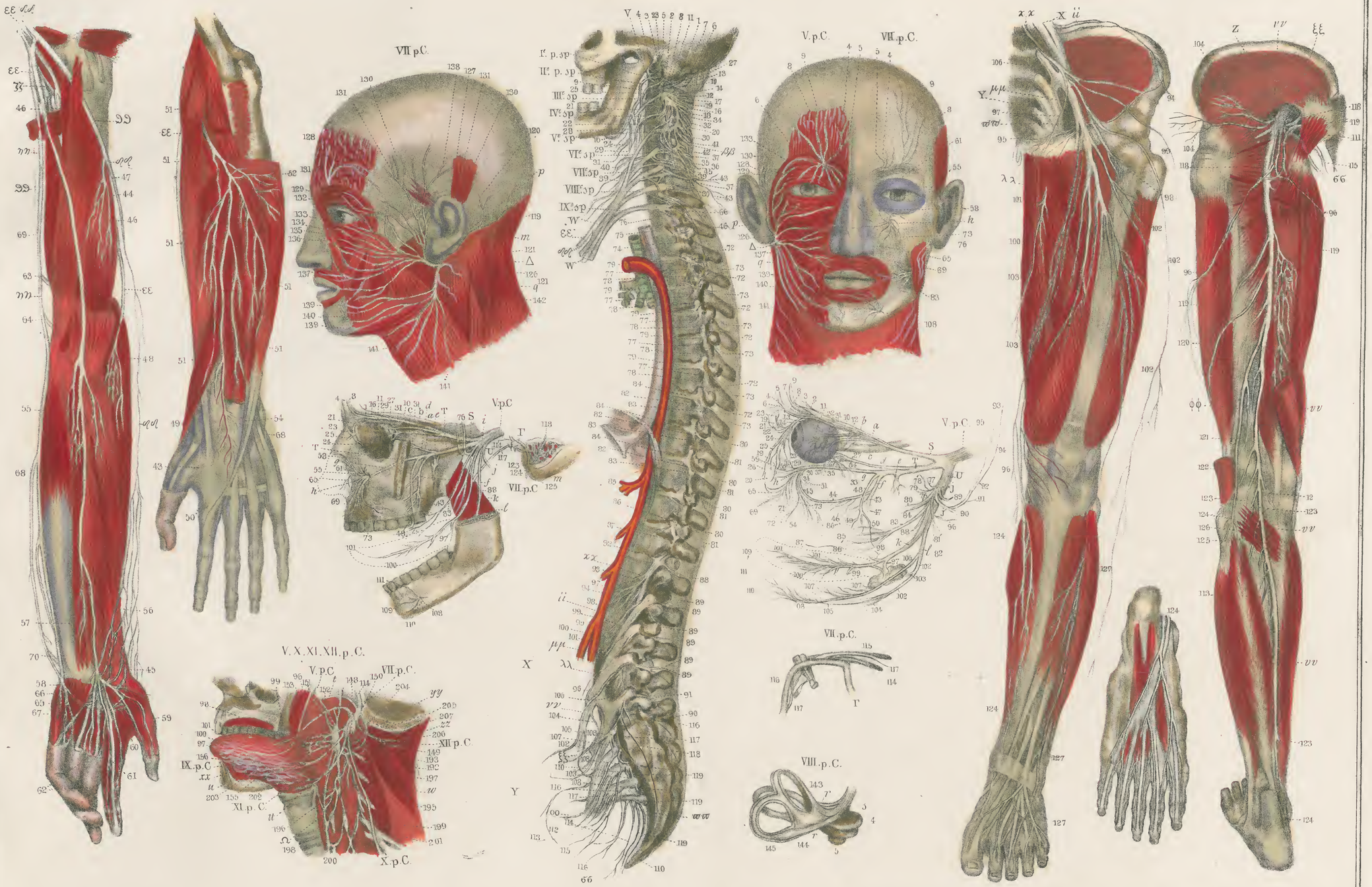
φφ External or femoro-peroneal br. (external popliteal, fibular or peroneal n.)
- 131 Peroneo-muscular n. (biceps, peron. longus, ext. long. and tibialis anticus m.)
- 132 Peroneo-cut. supra-musc. n. (anterior dorsal n. of the foot.)
- 133 Peroneo-præ-tibial n. (anterior tibial branch.)
  - 134 Præ-tibio-muscular n. (to the peron. ext. long. com. dig. pedis, tib. ant., and ext. long. poll. pedis musculi) and cutaneous nerves.
  - 135 Præ-tibio-musculi-tarsal.

Z *Great nervous fasciculus,* the PLEXI-ISCHIO-FEMORAL, (a continuation of the sacro-ischiatic pl.) (*The great sciatic nerve.*)

NOTE. In this table the *spinal pairs* are represented by Roman numerals; the *branches*, by small numerals; the *plexuses*, by capitals; and the *divisions of branches*, which are either distributed to the same part, or pass in the same direction, by Greek letters. The root of each nerve is *spino*: and where a plexus is formed, its filaments take the root *plexi*. The final word, in every case, points out the destination of the nerve. (Vide *Key to Syst. Anat.* p. 2.)

Neurography

PL. XIV



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NEUROGRAPHY.—Continued.

All the nerves which go out from the cranium preserve the generic root *cerebro,* to distinguish them from those which pass off from the vertebral column.*

I PAIR. CEREBRO-SUPRA-ETHMOIDAL (olfactory) nerve, a sensorial, cerebral prolongation, pedicullated, and having a bulging for the issue of the nerves of smelling. — Upper, inner and outer intra-nasal twigs (v. Aesthesiography, N.)

II PAIR. CEREBRO-OCULAR, (optic or visual) nerve, a sensorial nerve of much size joining its fellow (*chiasma*) before its exit from the skull. — Intra-ocular nervous pulp, called the *retina,* (v. Aesthesiography, I.)

III PAIR. CEREBRO-ORBITAR (common motor) nerve. The trunk is of some size and gives off considerable branches. It is a nerve of motion.
- *Supra-ocular branch.* . . . . . — δ Orbito-musculi-supra-palpebral n. (lev. palpebræ m.) ; ι Orbito-musculi-supra-ocular n. (rectus superior m.)
- *Infra-ocular branch.* . . . . . — κ Orbito-musculi-intra-ocular n. (rectus internus m.) ; λ Orbito-musculi-infra-ocular n. (rectus inferior m.) ; μ Orbito-musculi-maxillo-ocular n. (obliquus inferior m.)

IV PAIR. 2d CEREBRO-ORBITAR (or pathetic) nerve, a very long and slender trunk; a nerve of motion. . . — ν Orbito-musculi-trochlei-ocular *twigs* (to the obliquus superior m.)

V PAIR. The CEREBRO-SUPRA-SPHENOIDAL nerve, (TRIFACIAL or TRIGEMINUS n.)
The CEREBRO-SUPRA-SPHENOIDAL nerve, (trifacial or trigeminus n.)
A nerve both of motion and sensation. The exciting agent of the 1st, 2d and 8th cerebral pairs, and the proper nerve of taste.
It presides over the masticatory movements and the sensibility of the entire face. It is an assemblage of nerves in fasciculi, and before its exit from the cranium forms a gangliform expansion whence the 3 great fasicular branches go off.

S SUPRA-SPHENOIDO-ORBITAR N. (1st *Large or ophthalmic branch.*)

- *a Orbito-frontal* (frontal) *n.*
  - 1 *Proper* orbitar n. . . . . — 2 Orbito-intra osseous nerves (to the frontal sinus.) ; 3 Orbito-*anastomotic* extra-nasal (with the 1st branch of the 5th c. pair.)
  - 4 *Internal* frontal n. . . . . — 5 Fronto-cutaneous and muscular n. (to the corrug. supercilii and occipito-frontal m.) ; 6 Fronto-musculi-supra-maxillo-palpebral n. (to the orbicularis m.) ; 7 Fronto-*anastomotic*-orbito-extra-nasal and external frontal n.
  - 8 *External* frontal n. . . . . — 9 Fronto-cutanei-supra-cranial n.
- *b Orbito-oculi-nasal* (nasal) *n.* . . .
  - 10 Orbito-ocular *twig.* . . . . . — 11 Oculo-iridian n. ; 12 Oculi-ganglionic n. (receiving filaments from the upper cervical and orbitar ganglia.)
  - 13 Orbito-intra-nasal (ethmoidal, intra-nasal) *branch.*
    - 14 *Internal* intra-nasal, (internal pituitary) n. — 15 Naso-cutaneous n. ; 16 Naso-ethmoid. and int. front. n. (to the sinuses, v. Aesth. N. ; 17 Naso-vomeral n.
    - 18 *Ext.* intra-nasal n. (external pituitary) n. — 19 Naso-cutaneous n. ; 20 Naso-*anast.* cerebro-tempori-parotid. n. (with the 7th c. p.)
  - 21 Orbito-extra-nasal (infra-trochlean, external nasal) *branch.* — 22 Naso-præ-ocular n. (to the conjunctiva.) ; 23 Naso-musculi-frontal and maxillo-palpebral n. (to the orbicularis and occ. front. m.) ; 24 Naso-lachrymal n. (to the lachrymal ducts and sac.) ; 25 Naso-cutaneous n. ; 26 Naso-*anast.* cerebro-tempori-parotidal n. (with the 7th c. p.)
- *c Orbito-lachrymal* (lachrymal) *n.*
  - 27 *Internal* lachrymal *branch,* (to the gland.) — 28 Lachrymo-musculi-maxillo-palpebral n. (to the outer wall of the orbicularis m.) ; 29 Lachrymo-cutanei- 30 Zygomato-*anastomotic*-cerebro-tempori-parotideal n. (with the 7th zygomatic n. c. p.)
  - 31 *Ext.* lachrymo-post-zygomatic (malar) *branch,* (to the fossa.) — 32 Post-zygomato-*anast.* orbito-iridian n. ; 33 Post-zygomato-*anast.* cerebro-tempori-parotidal n. (with the 7th c. p.)
- *d Supra-pterygo-orbitar n.* . . . .
  - 34 Orbito-*anastomotic* lacrymo-post-zygomatic n. (with the 1st branch of the 7th c. p.)
  - 35 Orbito-glanduli-lachrymal n. . — 36 Lachrymal n. (to the gland.) ; 37 Lachrymo-musculi-maxillo-palpebral n. (to the orb. palp. m.) ; 38 Lachrymo-cutanei- 39 Zygomato-*anastomotic*-cerebro-tempori-parotidal n. (with the 7th zygomatic n. c. p. and 3d br. of 5th p.)
  - 40 Orbito-musculi-maxillo-palpebral n. (to lower part of the orbicularis m.)
  - 41 Orbito-cutanei-zygomatic and temporal nerves.
  - 42 Orbito-*anastomotic* cerebro-tempori-parotideal n. (with the 7th c. p.)
- *e* Ganglionic *supra-pterygo anastomotic* n. (to the pterygo-maxillo-palatine ganglion.)
- *f Sup. pterygo-post. alveolar n.* . .
  - 43 Post-alveoli-intra-maxillary n. (*posterior branch.*) — 44 Intra-maxillary n. (to the sinuses.) ; 45 Anterior intra-maxillo-*anast.* dental n. ; 46 Intra-maxillo-musculi-extra-labial n. (to the buccinator m.) ; 47 Posterior-intra-maxillo-dental and extra-alveolar n. (to the molares and gums.)
  - 48 Post-alveolar n (*ant. branch.*) . — 49 Post-alveoli-musculi-extra-labial n, (to the buccinator m.) Alveolar n.

T UPPER SUPRA-SPHENOIDO-PTERYGO-MAXILLARY N. (2d *Large or upper maxillary branch.*)

- *g Maxillo-infra-orbitar* n. (infra-orb. twigs.)
  - 5 Infra-orbito-intra-maxillary (posterior dentar) n. (in the sinus) . — 52 Intra maxillo-nasal (pituitary) n. ; 53 Posterior dentar-intra-maxillo-anastomotic n.
  - 54 (Superior anterior) infra-orbito-dentar and extra-alveolar n. (to the incisores, cuspidati and gums.)
  - *h* Infra-orbito-præ-maxillary n.
    - *Upper palpebral twigs.*
      - 55 Præ-maxillo-extra-palpebral n. — 56 Extra-palpebro-muscular n. (to the orb. palp. m.) ; 57 Extra-palpebro-*anast.* cerebro-tempori-parotidal n. (with the 7th c. p.)
      - 58 Præ-maxillo-intra-palpebral n. — 59 Intra-palpebro-cutanei-nasal and infra-palpebral n. ; 60 Intra-palpebro-muscular (to the orbicular m.) ductic lachrymal and *anast.* orb. ext. nasal n. (1st branch 5th c. p.)
    - *Anterior nasal twigs.*
      - 61 *Upper* præ-maxillo nasal n. . . — 62 Naso-muscular n. (to the lev. lab. sup. alæque nasi, dep. alæ nasi, and orb. oris. m.) ; 63 Naso-cutaneous n. (to the middle and lower part of the nose.) ; 64 Naso-*anast.* orbito-intra-nasal n. (with the 1st brauch of 5th pair.)
      - 65 *Lower* præ-maxillo-nasal n. . . — 66 Naso-infra-palpebral n. ; 67 Naso-muscular n. (to the orbicular. palpebrar. the elevator of the lips, nose and labial m.) ; 68 Naso-*anast.* orbito-intra-nasal n. (with 1st part 5th c. p.)
    - *Lower labial twigs.* . . — 69 Præ-maxillo-labial n. . . . . — 70 Labio-muscular n. (to the levator, labial-zygomatic and buccinator m.) ; 71 Labio-cutaneous supra-labial n. ; 72 Labio-intra-buccal n. (to the mucous membrane.)
    - *Outer twigs.* . . . . . — 75 Præ-maxillo-zygomatic n. . . — 74 Zygomato-muscular n. (to the *ext. part* of orb. m.) ; 75 Zygomato-*anast.* cer. temp. parot. n. (with 7th c. p.)

U LOWER SUPRA-SPHENOIDO-PTERYGO-MAXILLARY N. (3d *Large or lower maxillary branch.*)

- 76 Musculo-infra-zygomatic (masseteric) n. — 77 Infra-zygomato-articular-tempero-maxillary n. ; 78 Infra-zygomato-musculi-temporo-infra-maxillary n. (to the temporal m.) ; 79 Infra-zygomato-musculi-infra-maxillary n. (to the masseter m.)
- 80 Anterior musculi-temporo-infra-maxillary (external deep temporal) n.
- *i Pterygo-muscular n.* . . . . .
  - 81 Posterior musculi-temporo-infra-maxillary (int. deep temp. n.) — 82 Maxillo-*anast.* extra-labial n.
  - 83 Musculi-alveoli-maxillo-labial (buccal) n. — 84 Extra-labio-muscular n. (to the lesser pterygoid m.) ; 85 Extra-labio-intra-buccal n. ; 86 Extra-labio-musculi-anguli-labial n. (to the lev. aud dep. anguli oris m.) ; 87 Extra-labio-*anast.* cer. temp. parot. n. (with the 7th c. p.)
- 88 Musculi-pterygo-anguli-infra-maxillary (pterygoid) n.
- *j Pterygo-præ-auricular* (superficial temporal) *n.* . . . . . — 89 Præ-auriculo-glanduli-parotideal and cer. tempori-*anastomotic* n. (with the 7th c. p.) ; 90 Præ-auriculo *anastomotic* with the pterygo-lingual and cerebro-tempori-parotideal n. (with the corda tympani.) ; 91 Præ-auriculo-cutanei-conchineal and extra-tympanic n.
  - 92 Præ-auriculo-epicranial n. . . . — 93 Cutaneous epicranial n. ; 94 Epicranio-*anast.* spino 2d post-trachelian n. (to the occipito-frontalis m.) ; 95 Epicranio-*anast.* orbito-frontal and orbito-lachrymal n. (with the 1st braach of 5th c. p.)
- *k Pterygo-lingual* (lingual) *n.* . . . — 96 Linguo-muscular (or great pterygoid) n. ; 97 Linguo-glanduli-infra-maxillary n. ; 98 Linguo-amygdaline and pharyngeal n. ; 99 Linguo-*anast.* cerebro-hyoidi glossal n. (with the 11th c. p.) ; 100 Linguo-intra-buccal n. ; 101 Superficial lingual n.
- *l Pterygo-infra-maxillary n.* . . . (inferior dental n).
  - 102 *Exterior* infra-maxillary (mylo-hyoidal) n. — 103 Infra-maxillo-glandular n. ; 104 Infra-maxillo-musculi hyoidal n. (to the digastric and genio-hyoidal m.) ; 105 Infra-maxillo-musculi-infra-labial n. (to the dep. ang. oris and quad. genæ m.)
  - 106 *Inner* infra-maxillary n. . . . — 107 Infra-maxillo-dental and extra-alveolar n.
    - 108 Infra-maxillo-præ-mental n. . . . — 109 Mento-muscular n. (to the dep. ang. oris, lower part) and intra-buccal n. ; 110 Mento-*anast.* cerebro-tempori-parotidean n. (7th c. p.) ; 111 Mento-cutanei and musculi-infra-labial n. (to the quadratus genæ, labial and intra-buccal m.)

VI PAIR. 3d CEREBRO-ORBITAR n. (MOTOR EXT. OCULI,) a n. of motion, having one very slender trunk. . . — 112 Orbito-muscull-extra-ocular *twigs* (to the rectus ext. m.) ; 113 Orbito-extra-oculi-ganglionic *twig.*

VII PAIR. The CEREBRO-TEMPORI-PAROTIDEAL nerve, (the facial, or portio-dura of the 7th pair, of other anatomists.) The nerve of motion of the intra-tympanic muscles, and of the muscles of facial expression. (Small sympathetic n.)

- *Γ Intra-temporal portion.*
  - 114 Temporo-*anastomotic* ganglionic n. (Vide the vidian nerve.)
  - 115 Temporo-malleal n. ; 116 Temporo-stapedian n. — *Intra-tympanic nerves.*
  - 117 Temporo-*anastomotic* pterygo-lingual n. (*the corda tympani.*)
  - *m* Temporo-post-auricular (post. auric.) n. . . — 118 Post-auriculo-mastoid n. (to the mastoid cells.) ; 119 Post-auriculo-cutanei and musculi-occipital n. (to the occipital m.) ; 120 Post-auriculo-conchineal and muscular n. (posterior auris.)
  - *n* Temporo-styloidal (stylo-hyoidal) n. . . . — 121 Stylo-musculi-hyoidal n. (to the stylo-hyoideus and digastricus m.) ; 122 Stylo-*anastomotic*-spino 3d trachelian n.
  - *o* Temporo-infra-mastoidal n. . . . . — 123 Mastoido-*anastomotic*-cerebro-pharyngi-glossal n. (with the 9th cerebral pair.) ; 124 Mastoido-*anastomotic*-cerebro-visceral n. (with the 10th c. p.) ; 125 Mastoido-*anastomotic*-spino-cerebro-infra occipital n. (with the 12th c. p.)
- *Δ Parotid portion.*
  - *p Parotido-zygomatic* BRANCH. . . . . (*great transverse or temporo-facial branch.*) — 126 Parotideal n. ; 127 Parotido-*anastomotic*-pterygo-præ-auricular n. ; 128 Parotido-*anastomotic*-orbito-frontal n. (with the 1st branch 5th pair.) ; 129 Parotido-*anastomotic*-orbito-lachrymal n. ; 130 Parotido-cutanei-temporal and auricular n. ; 131 Parotido muscula n. (to the upper and lower auricular and orbicular. palpebrar. muscles, *upper part.*) ; 132 Zygomato-cutanei-extra-orbitar n. ; 133 Zygomato-extra-palpebral n. ; 134 Zygomatic muscular n. (to the lower, inner, and outer parts of the orbicular. palpebrar. and the great and lesser zygomatic m.) ; 135 Zygomato-cutanei nasal n. (dorsales nasi.) ; 136 Zygomato-*anastomotic* maxillo-infra-orbitar n. (with the 2d branch of the 5th c. p.) ; 137 Zygomato-cutanei and musculi-labial n. (to the orbicularis, buccinator and levator m.) ; 138 Zygomato-*anastomotic*-pterygo-præ-auricular n. (with the 3d branch of the 5th c. p.)
  - *q Parotido-post-maxillary* BRANCH. . . . . (*great descending or cervico-facial branch.*) — 139 Post-maxillo-cutanei and musculi-extra and infra-labial n. (to the buccinator, dep. ang. oris and quadratus m.) ; 140 Post-maxillo-*anastomotic* infra-maxillo-præ-mental n. (with the 3d branch of the 5th c. p.) ; 141 Post-maxillo-cutanei and musculi-infra-maxillary n. (to the platysma m.) ; 142 Post-maxillo-*anastomotic*-spino 3d præ-trachelian n.

VIII PAIR. The CEREBRO-INTRA-TEMPORAL (labyrinthic, acoustic or auditory) nerve, a nerve of sensation presiding over the sense of hearing. It consists primarily of plexi and is fasciular; divides into a great number of filaments, which are separated into two fasciculi, and ends in a gelatinous pulp.

- *r Vestibular and ductic fasciculi.* . . . . . — 143 *Upper* intra-temporo-ducti-membranous ; common ducti-membranous ; upper and outer membranous n. ; 144 Intra-temporo-vestibulo-membranous n. ; 145 *Posterior* intra-temporo-ducti-membranous n.
- *s Cochlean fasciculi.* . . . . . — 146 Intra-temporo-cochlei-membranous n. ; 147 Intra-temporo-cochlei-axial n.

IX PAIR. The CEREBRO-PHARYNGI-GLOSSAL (glosso-pharyngeal) nerve: the nerve of motion of the pharynx, of the body and point of the tongue. It is the principal agent of speech, or the articulation of those sounds which depend on the inflections of the tongue. (It is thought to be a nerve of sensation and intended to take cognizance of flavors on the velum palati.)

- *t Pharyngeal portion* . . . . . — 148 Pharyngo-*anast.* temporo-styloidal n. (with 1st branch 7th c. p.) ; 149 Pharyngo-*anast.* cerebro-visceral n. (with the 10th c. p.) ; 150 Pharyngo-*anast.* spino-cerebro-infra-occipital n. (with the 12th c. p.) ; 151 Pharyngo-*anast.*-plexi-pharyngeal n. ; 152 Ganglionic pharyngo-*anast.* n. ; 153 Pharyngo-amygdaline and musculi-pharyngeal n. (to the constrictor and stylo-pharyngeal m.)
- *u Glossal portion.* . . . . . — 154 Muscular glossal n. (to the lingual and hyo-glossus m. and anterior pillar of the fauces.) ; 155 Glosso-epiglottic and amygdaline n. (to the tonsils and mucous membrane) (circulus tonsilus.)

X PAIR The CEREBRO-VISCERAL (PNEUMO-GASTRIC) nerve (the middle sympathetic, the par vagum, or 8th pair of other anatomists;) the nerve of the internal sensations of a necessity for respiration in the lungs, of hunger, thirst and satiety in the stomach.
This nerve, at its origin, almost always anastomoses, by intra-cranial filaments, with the spino-cerebro-infri-occipital, and the cerebro-pharyngi-glossal (glosso-pharyngeal) nerves; a gangliform swelling is observable on a level with the cervico-laryngeal n.

- *Θ Cervical portion.*
  - 156 Cervico-*anastomotic* spino-cerebro-infra-occipital n. (with the 12th c. p.)
  - 157 Cervico-*anastomotic* cerebro-pharyngi-glossal n. (with the 9th c. p.)
  - 158 Ganglionic cervico-*anastomotic* n.
  - 159 Cervico-*anastomotic* cerebro-hyoidi-glossal n.(with the 11th c. p.)
  - 160 Cervico-plexi-pharyngeal (pharyngeal) twig. — A PHARYNGEAL PLEXUS. — 161 Plexo-musculi-pharyngeal n. (to the upper and middle constrictor m.) ; 162 Plexo-*anast.* pharyngo-glossal n. ; 163 Plexo-*anast.* ganglionic n. ; 164 Plexo-*anast.* spino-cerebri-infra-occipital n. (with the 12th c. p.)
  - *r Cervico-laryngeal (upper laryngeal) n.* . . .
    - *Internal laryngeal branch.* — 165 Laryngo-*anastomotic* plexi-pharyngeal n. ; 166 Laryngo-*anastomotic* cerebro-hyoidi-glossal n. (with the 11th c. p.) ; 167 Laryngo-epiglottic and laryngo-membranous n. ; 168 Laryngo-musculi-arytenoidal and crico-thyroidal n. ; 169 Laryngo-*anast.* thoraco-tracheal or recurrent n.
    - *External laryngeal branch.* — 170 Laryngo-musculi-pharyngeal and thyroidal n. (to the constrictor, sterno-and crico-thyroid m.) ; 171 Laryngo-glanduli-thyroidal and laryngo-memb. n.
  - 172 Cervico-*anastomotic* cerebro-hyoidi-glossal (with the 11th c. p.) and spino 1st trachelian n.
  - 173 Cervico-plexi-cardiac (ganglionic) n. (cardiac.)
- *Ξ Thoracic portion.*
  - *x Upper thoraco-tracheal n.* (inferior laryngeal or recurrent nerve.) . . — 174 Tracheo-*anast.* cervico-plexi-cardiac n. ; 175 Tracheo-*anast.* ganglionic n. ; 176 Tracheo-plexi-cardiac (ganglionic) n. ; 177 Pharyngeal, thyroidal and tracheal n. ; 178 Pharyngeal and crico-arytenoidal-trachelo-muscular n. ; 179 Trachelo-laryngeal and *anast.* cervico-laryngeal n. ; 180 Trachelo-plexi-bronchial n.
  - *y Thoraco-præ-tracheal n.* . . . . . — 181 Præ-tracheal n. ; 182 Præ-trachello-plexi-bronchial n. ; 183 Præ-trachello-arteral n. (to the cardiaco-pulmonary n.)
  - *z Thoraco-post-tracheal n.* . . . . . — 184 Post-tracheal and œsophageal.
  - 185 Thoraco-plexi-bronchial n. — *Π* BRONCHIAL OR PULMONARY PLEXUS. — 186 Plexi-intra-bronchial n. ; 187 Plexi-*anastomotic* ganglionic n. ; 188 Plexi-thoraco-abdominal n. . . . .
    - *Thoracic portion.* — 189 Thoraco-œsophageal n. ; 190 Thoraco-tronco-aortic n. — œsophageal cords.
    - *Abdominal portion.* — 191 Ganglionic abdomino-plexi-infra-diaphragmatic m. (the plexi-hepatic, splenic, coeliac and gastro-epiploic n.)
- *Σ Abdominal portion.* . . . . . .

XI PAIR. The CEREBRO-HYOIDI-GLOSSAL (HYPO-GLOSSAL or lingual) nerve. The motor nerve of the infra-lingual muscles, and of those of the base of the tongue, (the nerve of deglutition.)

- *tt Upper branch.* — 192 Supra-hyoido-*anastomotic* cerebro-visceral n. (10th c. p.) ; 193 Supra-hyoido-*anastomotic* spino 1st præ-trachelian n. ; 194 Supra-hyoido-*anastomotic* ganglionic n. ; 195 Supra-hyoido-glanduli-infra-maxillary n.
- *w Descending branch.* — 196 Supra-hyoido-plexi-infra-hyoid. (descending cerv.) n. — *Ω* INFRA-HYOIDAL PLEXUS. (or *anastomotic loop.*) — 197 Spino 2d and 3d. trachelian-plexi anast. n. ; 198 Plexo-musculi-hyoidal and thyroidal n. ; 199 Plexo-anastomotic and diaphragmatic n. (trachelian plexus.) ; 200 Plexo-intra-thoracic n.
- *xx Anterior branch.* — 201 Supra-hyoido-musculi-hyoidal n. (to the scapulo and sterno-hyoidal and sterno-thyroidal m.) ; 202 Supra-hyoido-*anastomotic* pterygo-lingual n. (with the 3d branch 5th c. p.) ; 203 Supra-hyoido-musculi-glossal n. (to the hyo-glossus, genio-glossus and lingual m.)

XII PAIR. The SPINO-CEREBRO-INFRA-OCCIPITAL nerve (spinal or accessory nerve of Willis.)
By some it has been regarded as the motor of the occipito-dorsi-scapular (trapezii) and sterno-mastoid-muscles. By others, (Bell and Shaw,) as an external respiratory nerve.

- *yy Internal branch.* — 204 Infra-occipito-*anastomotic* cerebro-visceral n. (with the 10th c. p.) ; 205 Infra-occipito-pharyngeal n.
- *zz Extern. branch.* — 206 Infra-occipito-musculi-sterno-mastoidal and dorso-scapular n. (to the trapezius m.) ; 207 Infra-occipito-*anastomotic* spino 2d and 3d præ-trachelian n.

* It must be remembered that the first pair of nerves is an anterior cerebral appendix (the caruncula); that the ten following emanate from the medulla oblongata; and the 12th from the medulla spinalis and the bulb, in reascending into the cranium. The names of the nerves designate at the same time their situation, track, place of departure and destination.

NOTE. In this table the root is *cerebro*, except for the 12th pair, which has *spino-cerebro* to mark its double origin. The word which follows points out the course and situation of the nerve. The branches and secondary rami are designated by capitals or small letters, according to their importance. The ramusculi given off by the secondary rami, are referred to by figures, and connected by brackets with the rami whence they spring. The filaments from the plexuses have the word *plexi*, and the last word in every case shows the destination of the nerve.

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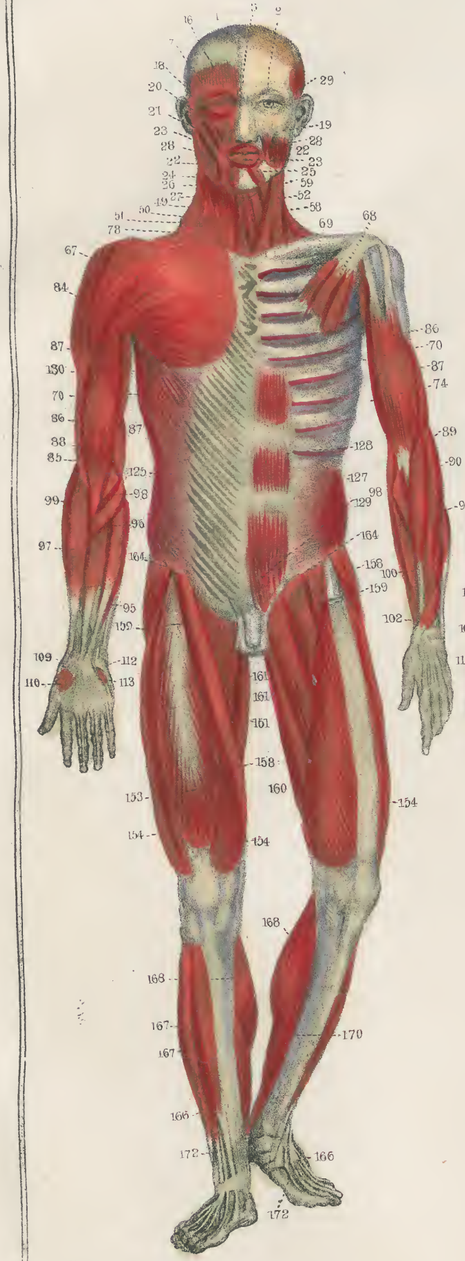

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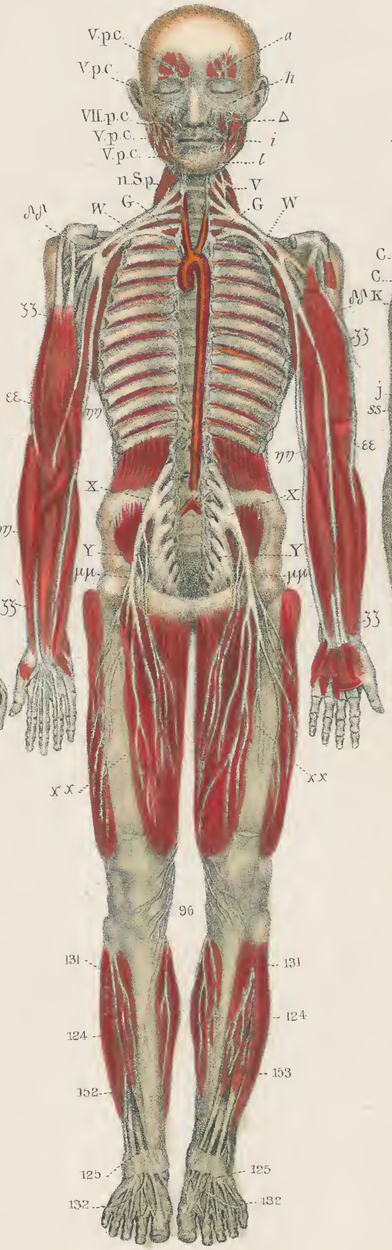

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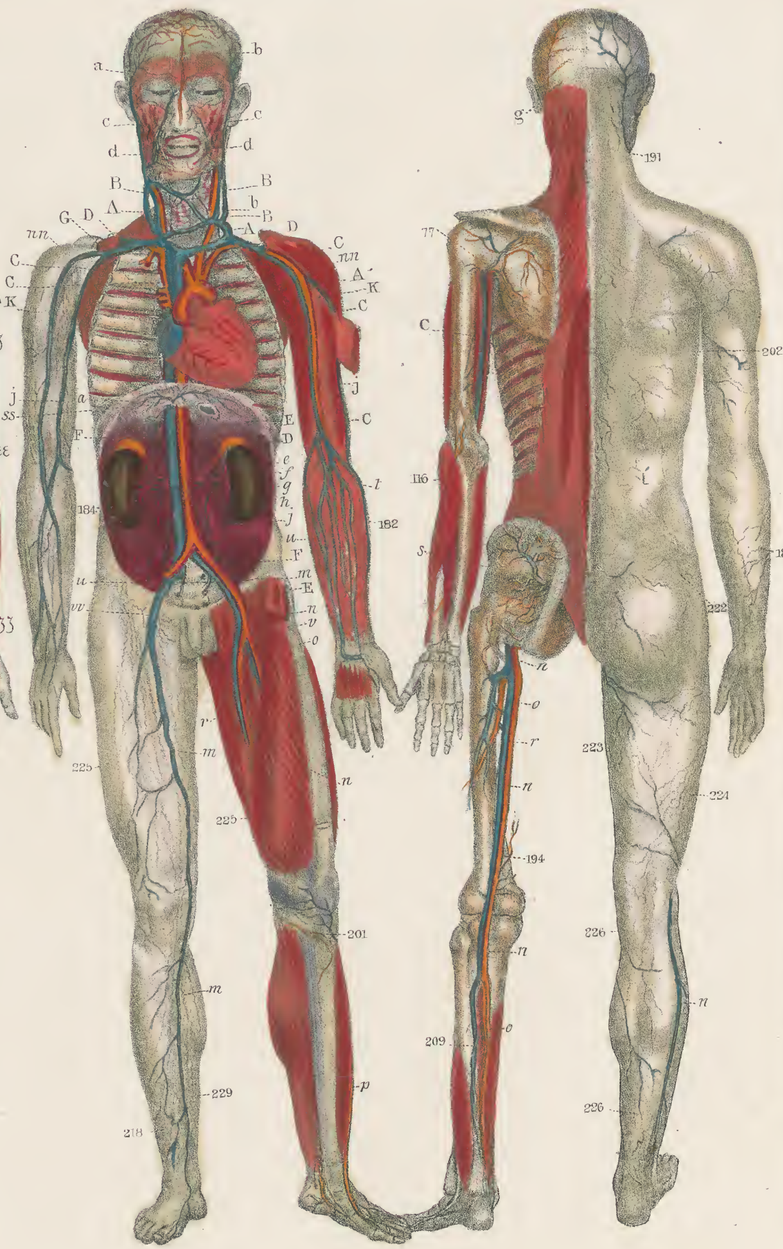

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